Gleanings in Bee Culture

October, 1956 Vol. 84, No. 10

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Monthly HONEY Report

SUMMARY

EXTRACTING OF HONEY throughout the country was fairly general with some sections practically completed while other sections were just starting. Weather conditions in the Pacific Northwest were irregular, ranging from hot to warm during the early part of the period and becoming cooler at the close of the period. The flows in this area were fairly well completed with yields about normal. Extracting was well underway in the Inter-mountain States and was probably about half completed. Yields have been very spotted, ranging from one-third of a crop to a full crop compared to a year ago. Weather in the Southwestern States continued hot and dry and although light scattered rains were received in some areas, soil conditions still remain very dry. Extracting has been about completed and indications are that the crop will be approximately one-half of normal. Some bee losses were reported due to cotton insect control. The main honey flow in the Red River Valley was practically completed about the middle of the month, with prospects of the crop being about average or slightly below average. Recent rains during the period were beneficial to honey plants, particularly clover. The honey flow in Iowa was generally slow during the period due to the lack of bloom. Extracting was well underway with yields variable. Some yards were very good and others poor.

Weather conditions during the period showed some improvement in the East Central and North Central States. In Michigan extracting started around the first of the month. A few locations report a fair crop but the main crop of light honey throughout the State appears to be short. The crop in Minnesota will be short compared with a year ago and estimates range from one-fourth to one-half of last year's crop. Crop losses have been due mostly to too much rain, cloudy and cool weather. If temperatures stay normal or above a good fall flow can be expected. While weather conditions have improved in Wisconsin, bees have not accumulated the surplus honey they have in other years. Present indications are that the crop will be smaller than a year ago. Rain over most of the State of Ohio during this period hampered bees in their activities. If the weather becomes favorable, fall prospects could be excellent. The honey flow in Indiana and Illinois was lighter than last year and good weather is needed for the production of a fall crop.

Yields in the Northeastern States were generally below those of a year ago and apiaries have varied greatly in the yields of surplus honey. The buckwheat crop in Pennsylvania was light. Indications are that the crop in most States of this area will be lighter when compared with a year ago. Conditions in the South Central States remain satisfactory with colonies generally inactive, except for bees working a few miscellaneous flowers. If the weather remains favorable there should be a good fall flow. Weather conditions were varied in the Southeastern States with soil conditions in parts of Georgia becoming rather dry. The fall flow has been reduced by dry weather. Very few plants were yielding any nectar in Florida. Rains have been sufficient and bees were in good condition. Badly needed rains have fallen over much of east central Mississippi and temperatures have dropped considerably from earlier in the month. However, more moisture is needed so that bees will have sufficient winter stores.

Demand and inquiry for honey varied throughout the country and both were more active when compared with a year ago. The honey market remained in a good firm condition with a generally favorable movement. Sales of honey in California ranged from 11c to 16c, with most sales of the lighter color honey

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(Continued from previous page)

between 12½ to 15c. Honey in other large producing areas generally sold in the 13 to 15c range for the lighter color. Darker colors sold as low as 10½c. Practically no sales were reported on old crop honey.

The beeswax market was a little firmer with most sales in large lots between 54 to 58c and smaller lots and darker colors sold at 46 to 48c. The beeswax market in New York City was unsettled and showed a wide range in prices. Offerings from producing sections were light and demand was limited.—U. S. Dept. of Agriculture, Agriculture Marketing Service, Washington, D.C., September, 1956.

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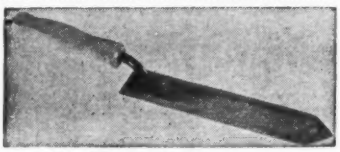

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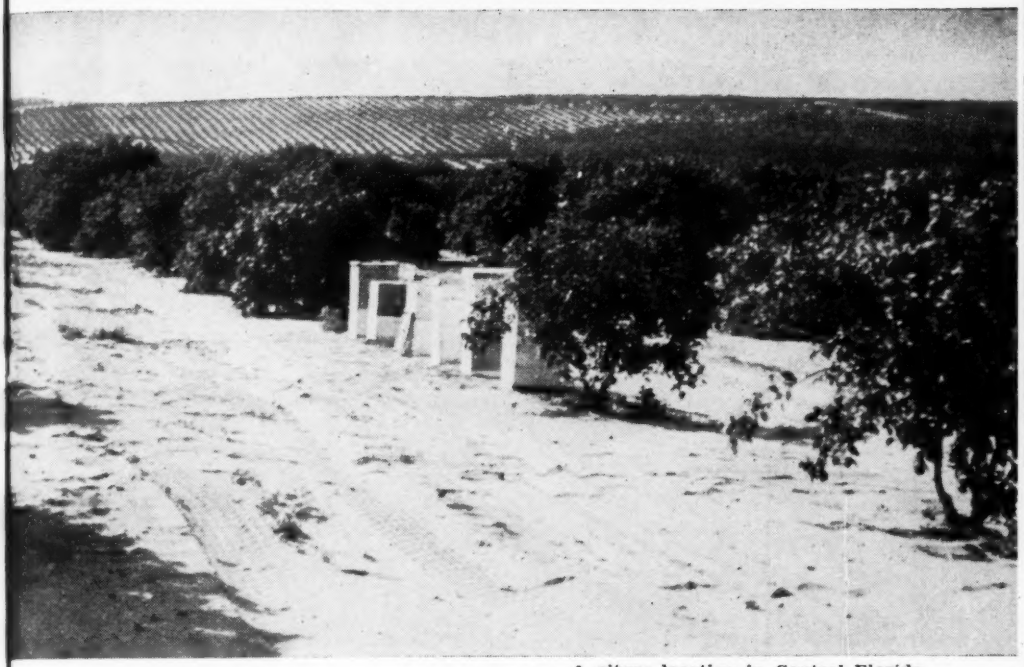


A citrus location in Central Florida.

Honey Production in Central Florida

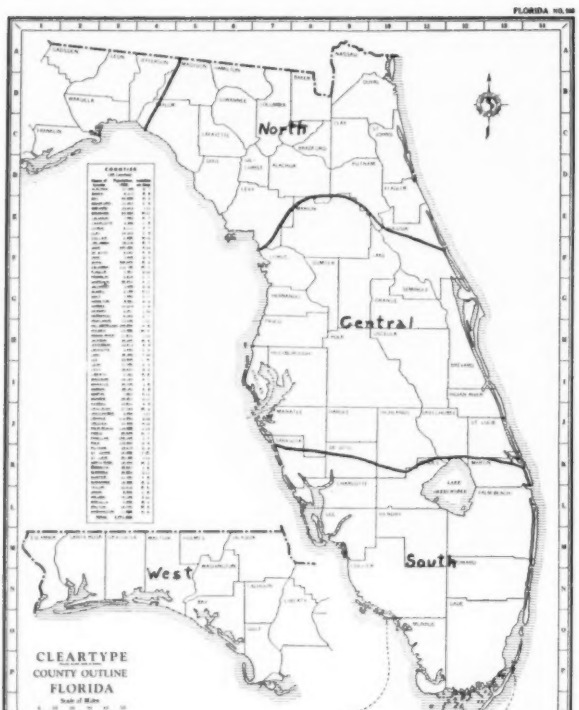
By F. A. ROBINSON
Florida Agriculture Experiment Station
Assistant Apiculturist,

IN CONTRAST to most of the other southeastern states, Florida is one of the leading honey producing states in the country with an annual production of 14 to 16 million pounds. It is estimated that there are more than 10,000 beekeepers in Florida ranging from those having one colony to those operating one or two thousand colonies.

The methods used and problems faced by our beekeepers are almost as numerous as their numbers. In a state such as this it is quite difficult to pick any one area and designate it as the number one honey producing area, as nearly all parts of the state are good beekeeping areas sometime during the year. On the accompanying map I have outlined the general honey producing areas of this state.

In a discussion of beekeeping and honey production in Florida, one naturally thinks first of citrus honey since this is the largest single variety of honey produced. Approximately one-half of Florida's annual honey production comes from the various varieties of citrus. The area marked on the accompanying map, as Central Florida, includes the entire citrus belt extending from Marion County in the north to Glades County in the south, thus covering the entire central portion of the state. In this area there are approximately 596,600 acres planted to citrus and new plantings are being made at the rate of 15,000 to 18,000 acres each year. Figure 1, is a view of groves in the heart of the citrus belt.

The nectar flow from citrus is usual-



ly quite heavy and normally begins between the middle of February and the first of March depending to a great extent on the weather conditions prevailing at that time. In years of unusual cold, the start of the flow may be delayed as late as the middle of March. Citrus trees are generally in full bloom for approximately three weeks during which time the bees may have from 12 to 15 days of good flying weather; that is, days when it's warm, with no rain or wind to hinder their flight. During these 12 to 15 days strong colonies will store from 75 to 150 pounds of honey, with the average yield per colony somewhere around 100 pounds.

The most serious problem facing the producer of citrus honey is that of having his bees in good shape at the beginning of the citrus flow since they don't have time to build up their strength and then make a crop of honey after the flow starts. Once the citrus bloom ends, the bees must be moved to other locations for the summer as there are no other nectar plants found in citrus groves since most growers have changed to the practice of clean cultivation in their groves.

There are an estimated 25,000 to 30,000 colonies of bees located in the citrus belt each year and good locations are becoming increasingly difficult to find, not because of any shortage of citrus nectar but because of the inaccessibility of the groves. Since the soil in most of the citrus area is deep loose sand, ordinary trucks find the going quite difficult once they get off the roads. Therefore apiary sites are limited to locations along the improved roadways or waste land in the groves.

Western Florida (see map) which includes the tupelo area is the second most important honey producing area of this state. The main concentrations of tupelo are found in Gulf, Liberty, and Calhoun Counties. This small area accounts for almost the entire commercial production of tupelo honey in this country. The production of tupelo hon-

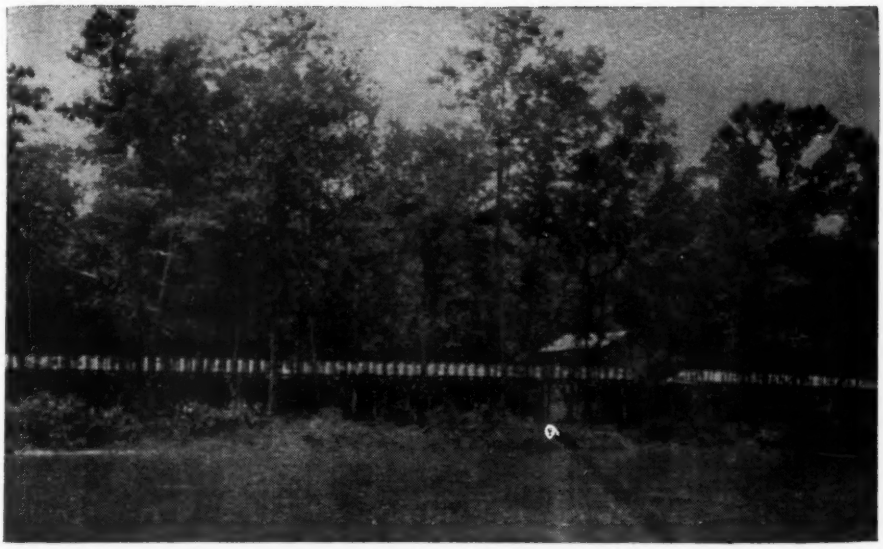
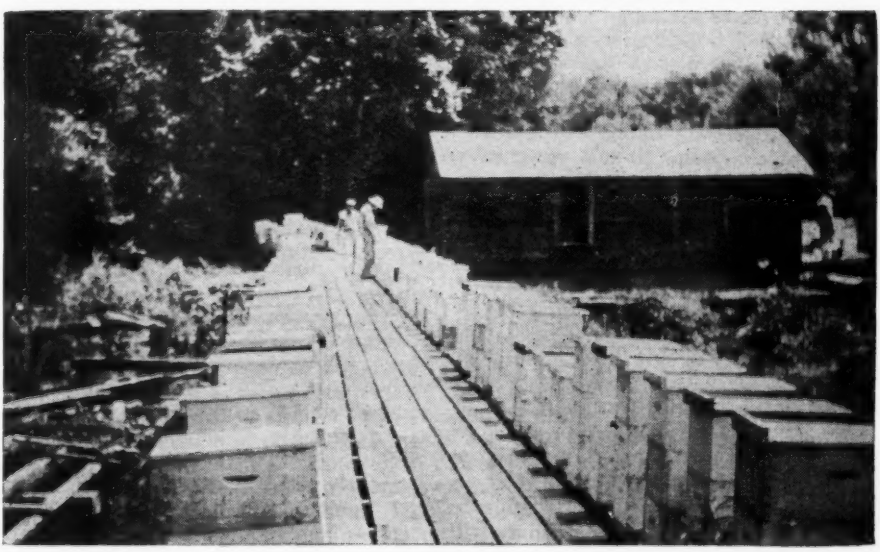


Fig. 2—Apiary on the bank of Chipula River in tupelo area.

ey is not a business to be undertaken by anyone who is afraid of hard work. Nearly all of the better locations are in the swamps along river banks, and the bees and honey must be moved up and down the rivers by barges. The entire area is usually flooded during the spring of the year, so the bees must be kept on platforms or scaffolds to be out of reach of the high waters. This country is also very heavily populated with bears, that are widely known for their fondness of honey. To overcome these problems the beekeepers have resorted to specially designed platforms (Fig. 2 and 3).

Fig. 3—View of typical platform showing arrangement of hives and building.



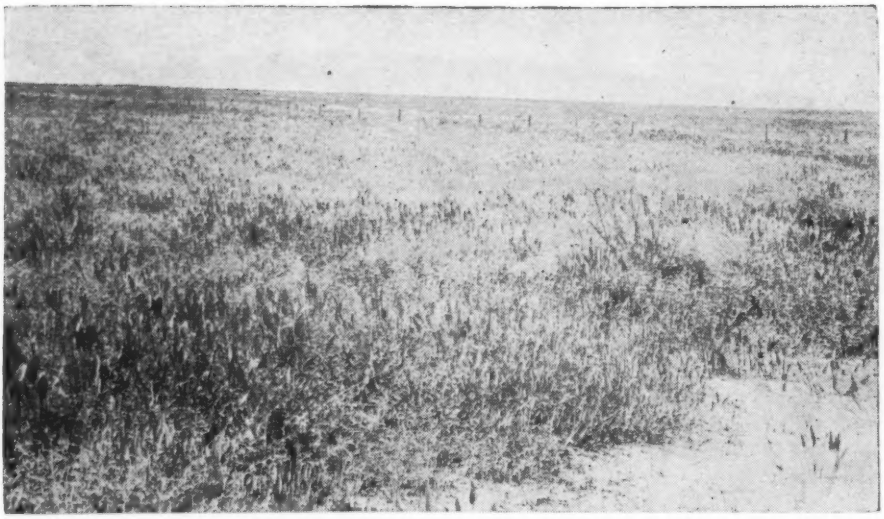


Fig. 4—Smartweed field in Florida Everglades. Broad-leafed plant in foreground is pickeral weed, which also has some value as a nectar plant.

Since it is not practical to carry full supers of honey up the river to be extracted, most platforms are built around a building which contains living quarters for the workers and an extractor and settling tanks. The building also serves as storage room for the empty supers during the off seasons. Most beekeepers in this area have more than one location and they operate from 50 to 150 colonies at each location. The tupelo nectar flow begins between the middle of March and the middle of April depending on the weather conditions, and the bloom lasts for ten days to two weeks.

The tupelo nectar flow is very heavy during good seasons and at times the secretion of nectar is so heavy that it can be shaken from the flowers by hand. However, the early spring weather in this part of Florida is quite variable and frequently there will be cold or rain during the tupelo bloom, so that the bees will be unable to fly and gather nectar. With a flow which lasts only a few days like the tupelo, a two or three day spell of bad weather results in the loss of a large part of the crop. Once the tupelo flow has ended the bees must be moved out of the swamps to their summer locations where they will remain until time to move back for the next tupelo flow.

There are several other good nectar producing plants in the western part of Florida, such as ti-ti, willow, red maple, and Mexican clover, but they are important only for building up or maintaining the colonies, and are not regarded as commercially important nectar sources.

The third major honey producing area in this state referred to on the accompanying map as South Florida, extends from Lake Okeechobee south to the Keys. This part of the state which includes the Everglades contains some of the finest beekeeping territory in this state. In fact the Everglades is one of the few areas in this country where honey is produced throughout the entire year. Some beekeepers in this section have found it necessary to extract honey every month of the year. In this wet marsh area there are a large number of good nectar producing plants among which are found the following:

Nuttall's thistle, Cirsium nuttalli DC.: A few years ago this plant was one of the most important honey plants in the Everglades. Thistle honey is very mild flavored, thick bodied and light colored, and does not granulate quickly. This plant blooms during the spring

Fig. 5—A typical apiary site in Florida Everglades. Note bricks on hives to keep covers from being blown off.

from April to June. As more and more land is put into cultivation around Lake Okeechobee the thistle is gradually disappearing and dense growths of it have become quite hard to find.

Smartweed, Polygonum hydropiperoides Michx.: Fig. 4 shows a field, several thousand acres in size, solidly covered with smartweed. This plant blooms for several months during the summer and fall and yields large quantities of nectar. Honey from this source is dark amber in color and strong flavored and is not considered to be a table grade honey. Smartweed is probably found in greater abundance than any other plant in this area.

Prairie Sunflower, Helianthus agrestis Pollard: This plant was formerly quite important in South Florida and was found covering thousands of acres. However, in recent years much of this land has been put into cultivation and the prairie sunflower is no longer very important in the beekeeping picture. This plant blooms from October through December, and where found in abundance is still important for colony maintenance since at this time of the year there are few other plants in bloom.

There are numerous other good nectar plants in South Florida such as willow, button bush, matchweed, water primrose, and many others, but they are not considered to be of commercial importance except in so far as they contribute to colony maintenance.

The most important single source of nectar in the South Florida area is proably saw palmetto, **Serenoa repens** Bartr. In the area between the southern edge of the citrus section and the northern edge of the Everglades there are miles and miles of land covered with this plant. Saw palmetto blooms in late spring from April to June and in good years produces large quantities of light greenish colored nectar. Saw palmetto is found growing throughout the entire state but doesn't yield much nectar in the high and drier locations.

While the South Florida area is one of the finest honey producing areas of the state a discussion of it would not be complete without mentioning a few of its drawbacks. In the first place, this part of the state is still largely undeveloped with few roads other than the main highways. Anyone who has ever been through this part of Florida knows one doesn't get far off the roads in a car or truck without getting stuck, as most of the area is under water a good part of the year. Also wind is quite a

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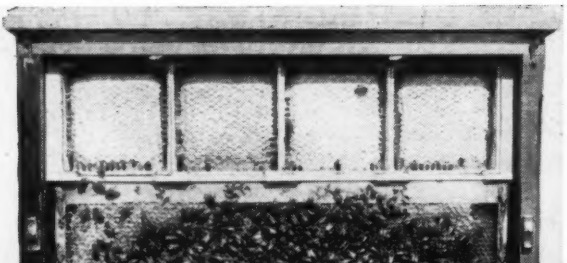

Vitalizing the Sale of Honey

by CHARLES W. GOUGET

UNLIKE AUNT JEMIMA'S Pancake Flour, Grape Nuts or Corn Flakes, honey is a seasonal commodity which is brought to the attention of the public most forcefully only once each year with each new crop of honey. Since even the best advertising has very few lasting "carry-over" benefits from one year to another, what is accomplished one year in the art of promoting honey sales is lost almost entirely by the next year. This means that with every new crop there must be a new beginning with new promotion and more duplication by the beekeeper in order to bring the public out of its accumulated "lethargy" and make it again honey conscious.

Among the most successful devices used for the promotion and sale of honey are the observation hive with the frame of bees. These two effective "tools" for advertising honey can justly be called the animated "neon signs" of the honey industry. They draw crowds of people at public places, such as state or county fairs, roadside stands, and around store windows.

The bees observed through the glass are a source of lasting wonder and mystery to those who watch them. Girls may scream and flee at the sight of the "crawlly" things only to return the next moment to try and find the queen. No man-made signboard, however glittering, can boast of such lasting fascination. Widely used, this innate human interest in bees can be put to valuable use in the promotion and sale of honey.

When to Advertise Honey

Every beekeeper has noticed that honey sales are best during cool weather — "when the frost is on the pumpkin". In cool weather people seem to become "honey-minded" quickly and honey disappears rapidly from the beekeeper's and the grocer's shelves. This fact is especially true at the beginning

of the new crop season when the diet shifts more toward energy foods for cold weather. During the late fall, honey is much like toys at Christmas time: no sales talk is necessary because honey and pancakes are the "password" for all those who enjoy honey. Often many small producers are sold out at the beginning of the season without any advertising, but advertising may be a "lifesaver" for those who have large surpluses at this time.

On the other hand, almost every beekeeper has had the discouraging experience of trying to sell honey during warm weather. It just will not sell! The response of the customer is always the same: "Come around when the weather gets cooler!" or "It's not cool enough for honey and pancakes yet!" At such times almost any kind of promotion or advertising is so much time and money wasted because the same thing will have to be duplicated when the weather turns cooler.

In most communities the demand for honey gradually decreases after October or November so that it becomes the problem of the beekeeper to stabilize the demand during this period by every promotional scheme at his command. Gift packages and fancy containers may work wonders during the holiday seasons, and the demonstration frame of bees, wisely used, can play a most important role in this connection and in later promotional work.

In a Store Window

The purpose of a store window is to sell the merchandise represented in it, and the amount of merchandise sold will be in direct proportion to the amount of traffic passing the window, and to the size and quality of the display in it. Movement is always interesting and few things will captivate the attention of passing shoppers more than a demonstration frame of real, live bees. The observation frame itself must present the appearance of a nicely finished piece of furniture, properly stained and varnished. The brood comb inside, containing brood at various stages of development, should be light in color and clean, without broken and leaking cells, dead bees or chewed-up wax. If an observation frame is used with pound comb sections the cappings should be white and clean and filled out completely. Nothing will do more to "kill" honey sales than a "half spent" observation frame of bees in a store window.

Where there is a choice in the matter the exhibit should be placed in a north window or the frame must be protected from extreme heat and direct sunlight. An electric fan placed in a warm window will do much to keep the bees in good condition. The bees must have adequate ventilation or they will try to provide it for themselves and "burn" themselves out in so doing. In addition, if the exhibit is to last longer than one week it is usually wise to alternate two observation frames at four-day intervals so that one may be given an "airing" while the other is on duty.

However, an observation frame of bees will not sell honey alone because by itself it is only a curiosity with little if any connection with the products sold in the store. In any window display advertising honey the observation frame of bees should be the "focus" of attention flanked on both sides and possibly on top with a galaxy of honey products sold in the store. Large, clean, orderly displays will attract a great deal of attention, and the observation frame of bees will hold it. The "after-image" of such exhibits will persist when the customer enters the store.

At the Roadside Stand

"Watch live bees make honey at Joe Bloe's Honey Stand on Swift Road". Such an advertisement in a local paper or on a road sign will attract untold curiosity seekers in addition to many who earnestly desire to improve their education. Since a roadside stand is usually located in the country this is one place where a complete observation hive can be set up with a minimum of trouble. However, the operator of the stand must not lose sight of the fact that the object of the observation hive is to sell honey, and not merely to provide an interesting curiosity for people to look at. This means that the observation hive must be surrounded with honey and honey products so that prospective customers will make the "connection" and, of course, purchase the honey.

To obtain the best possible results the observation hive should be inside of the roadside stand with the outlet for the hive on the roof or out the back of the stand where the bees cannot possibly sting the customers. One customer

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stung by a bee may drive dozens of customers away from the stand. In addition, one sting is often very serious for some people, a fact which may result in expensive litigation and costly doctor bills for the operator.

However, with the observation hive inside of the stand the customer must come in to see it, and when he does he is surrounded on all sides with honey and honey products. As he looks at the observation hive he again observes honey neatly arranged around it. At this point his resistance to purchasing honey usually breaks down.

At the Country Fair

There are few places where people are in a happier mood to spend money than at a country fair; likewise there are few places where more people pass a given location. The advertising advantages of such a combination is obvious, in fact, the situation for selling almost anything can hardly be improved. Therefore, given a good location for a honey display and a "powerful" exhibit to put on that location the happy, foot-weary "fair-goers" will do the rest. However, a few jars of superior honey arranged on a small table on an outside aisle will not do the trick, in fact, they will hardly be noticed. Such "feeble" attempts at honey promotion are little better than none at all. To be really effective the honey exhibit must be along a center aisle and it should be large enough to "tower" above surrounding exhibits in order to attract attention. The observation hive can be the feature attraction for the passing traffic, and if the exhibit is very large additional observation frames of bees may be scattered among the honey products to dispurse the crowd. In addition, like the "ballyhoo" man in the circus, a continuous lecture on the bees in the observation hive will help to draw customers from neighboring exhibits. Here again, however, the object should not be to provide entertainment, but to sell honey. The lecturer and the observation hive should be surrounded with honey products of the finest quality, and honey should be sold on the spot. There is probably no other place that can do so much to promote honey and honey products in so short a time as state and county fairs.

Stocking an Observation Frame of Bees

If an observation frame is to be used for public demonstration it should be purchased from a dealer in bee supplies unless one is a very good cabinet maker. A crude, apple-box affair suitable for personal observation should not be used.

Stocking the observation frame should be no problem for the experienced beekeeper, and perhaps the easiest approach is to use one or more deep frames of bees with a queen, brood, honey, and pollen from a "nuc" if one is available, otherwise a weak hive may be used. If the weather is warm enough for the bees to fly it is better to take the frames during mid-day when many of the older bees are out. Younger bees are more contented under confinement, but there must be enough bees to cover the brood and to provide an interesting demonstration.

After the frame or frames with bees have been placed securely in the observation container, every effort should be made to make sure that it is made "bee tight". Bees can equeeze through spaces that are often unnoticed, a fact to which most beekeepers can testify from personal experience. The glass panels should be checked to make sure they are held securely in place. The top, too, must be held firmly with screws or clamps, and it must set flush with the boards underneath, and the wire covering the air vents must not be damaged. No bees should be allowed to linger on the outside, and the side covers should be used at all times when the observation frame is not in use. The vents should remain open. The bees should be supplied with water periodically by soaking a sponge with water and placing it above a screen in the top of the hive.

Having been assembled the observation frame is ready for its first assignment as one of the most effective devices for the promotion and sale of honey.

Our Cover Photo

WHEN A CUSTOMER enters a grocery store and is confronted with a sizeable honey display, he or she will pay some attention to it and will undoubtedly make a purchase. —U.S.D.A. photo.

B & Z LIBRARY

Photo courtesy Iida McGowan Photography, St. Paul, Minn.

The Air Age and Beekeeping

Told by REV. B. JACOBS, Christoval, Texas

FROM PAST experience, I know that keeping bees in outyards causes many trips a year to each location. The following is a list of some of the things done on these trips.

1. In the early spring checking for stores of honey and signs of brood rearing.
2. Looking for vandalism from animals or humans and damages from winds.
3. Checking progress of the honey flow.
4. Watching for signs of swarming.
5. Shaking bees into cages for shipment.
6. Also to see if other beekeepers have moved in too close for good crops of honey.
7. And, of course, we must keep on the lookout for moth damage and disease.

Now the above seven things may be done very well with the use of the airplane as transportation, the only requirement being a will to learn flying and a short flat strip of ground free from obstructions for use as a landing strip. Of course, this should be located as closely as possible to the bees. Therefore if you intend flying, your apiary should be located with this thought in mind.

Item two may be checked without landing, unless of necessity you need to land and restore fallen hives, etc.

Item six may also be checked from the air and many times this is the only way to check this item.

If you are operating on a commercial scale, the larger operations, such as removing the honey crop, will be handled by truck, but here again the airplane keeps you in constant touch with your whole operation.

Amazing is the word to describe the number of outyards that may be visited in one day by airplane, landing only where needed.

The two-place aircraft seems better fitted for beekeeping as it requires very short space for take-offs and landings, and are cheaper to operate and buy.

For example, one two-place aircraft now in full production flies at a regular speed of 112 miles per hour, and may be flown as slowly as 38 miles per hour for landing. This one has a 95 horsepower motor, and is especially designed for short rough field ability and load carrying.

Gasoline milage on this airplane will compare favorably with your automobile. Also the original purchase price will compare favorably with your car.

Although I have been flying for 15 years, I notice where some are learning to fly in one day—that is, learning the basic lessons and flying by one's self in five or six hours.

One does not have to be young to

(Continued on page 636)

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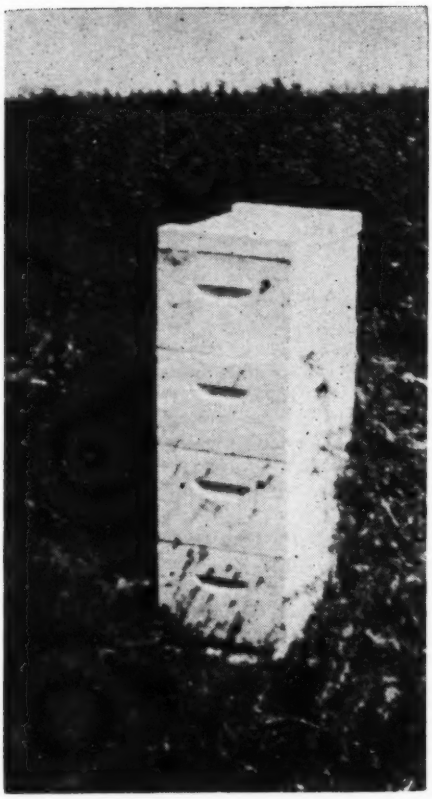
Beekeeping in the Northwest

by HOWARD ROCK
Dale, Wisconsin



Eight-frame hive on alfalfa pollination. Observe the luxuriant growth of alfalfa, equalled in few places.

"YOU CAN DRIVE down this road and in less than one mile you will see more than 1000 colonies with a satisfactory crop of white honey on each one."

A veteran honey producer of the lower Yakima Valley of Washington State told me that last year and he was not exaggerating in the least. There were, in fact, several roads in the same region equally crowded with bee yards of up to 100 colonies.

There is no doubt that the irrigated valleys of this state have tremendous honey-yielding potentialities especially if the soil is of volcanic origin as in the Yakima Valley. Single colonies make up to 650 pounds of honey.

However, there are serious drawbacks—in the weather, in farm practices, and, most of all, in the avarice of man.

The bee-pasturage proposition is comparable to that of the Red River Valley of Minnesota in the 30's when half of that country was white sweet clover (**Mellilotus alba**), the one big difference being that, here, territory, like in any irrigated valley, is very limited while up in Minnesota there was plenty of room for all, within reason.

In previous years the large part of the crop in this valley came from sweet clover with alfalfa playing a secondary role. In more recent years there has been a switch to alfalfa seed production. The more competent growers realize up to 1,700 pounds of seed per acre. This fantastic rate of production is made possible by extreme soil fertility, intelligent cutting and irrigating, and by the heavy concentration of honeybees and the native alkali bees.

One would naturally suppose that honeybees would be very highly appreciated by the alfalfa farmers. As a general rule that is the case although a

substantial number of the most successful seed growers are quite indifferent to the role of the honeybee.

What is the cause of this defection? The alkali bee, which is indigenous to this valley. The individual alkali bee is far superior to apis mellifica in tripping the keel of the alfalfa floret because it is stronger, hardier, and a more assiduous worker. They maintain large nests or galleries in the hardened, packed, sun-baked earth of old roads and other non-irrigated land. I wish that I could offer a more lucid explanation of this bee's characteristics which are so highly prized out here. To say the least, it is a formidable competitor of the honeybee, at least in the alfalfa.

Everyone is acquainted with Washington State apples, pears, and sweet cherries. For my own part I have never eaten fruit that could match the quality of apples, etc., of this section in any of the better fruit growing regions of the western hemisphere. In fact, I believe that only two other regions can rival the Yakima and Wenatchie Valleys of this state and they are the Mendoya Valley of Argentina and a few limited sections in the Central Valley of Chile. Certainly the apple-growing potentialities of this section are unique and the growers exploit them to the utmost.

Bees for Orchard Pollination

Honeybees play a major role in the fruit business here and during the blooming season beekeeping is a night and day proposition as thousands of hives are moved into the orchards, some arriving from the Pacific Coast via the Cascade Mountain passes. It is strictly a healthy, young man's business. Competition is very keen and as time goes by the more intelligent, ambitious beemen succeed in getting the larger share of orders.

The conditioning of colonies for orchard pollination is strictly for expert beekeepers. Each hive must contain at least eight frames of brood, not more than ten, have sufficient empty combs for apple honey and pollen, if any, plus enough honey to maintain the colony in case of bad weather. There cannot be an excess of honey as this would hamper loading and unloading and cause possible swarming in the orchard. Weak colonies of course, would be worthless to the fruit man.

The beekeeper must have an adequate, competent crew of bee movers and trucks in good repair as the fruit grower is very particular about **when** the bees are delivered and taken away as both these operations must synchronize with his spraying program. I might say here that orchard spraying has been developed into a science.

Like everywhere else the bees are always in danger of poisoning and the effects of parathion can be observed all summer long, especially on the queens. Much time is saved if an ailing queen is replaced immediately.

After the bees are brought home from the orchards they are inspected once more and conditioned for the alfalfa and later mint and spearmint flows. At this time, all the honey that was removed to lighten the hives "before orchard" is given back as the most populous colonies would most surely starve. Unlike the Mid-west and east the secondary flows are conspicuous by their absence in the Yakima Valley. In fact, it is commonplace to encounter huge colonies that starved during June in neglected apiaries.

As the colonies will normally "stand still" during this month most operators make their increase at this time. Inasmuch as the main honey flow starts late, the apiaries that produce the most increase also produce the most honey. This is also the time to replace all old queens. If this is not done there is always an epidemic of supersedure swarming which to this writer is the most exasperating problem in beekeeping.

It is a fact that the large producers of this area would greatly profit from their own small, well-managed queen yard. Some of the better producers run modified two-queen colonies as described by Jay Smith in the June, 1932, issue of this magazine. I might say that every producer of this valley or a like region would profit greatly from reading this article by "The Jay".

Several years ago when New York beekeepers obtained both a white honey crop plus buckwheat, there was quite a rush to remove the white honey so that its quality would not be lowered by mixture with the darker buckwheat. The same problem exists here, only the

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Typical bee yard in the sage bush adjacent to alfalfa and mint. Locations like these offer most protection against heavy poisoning.

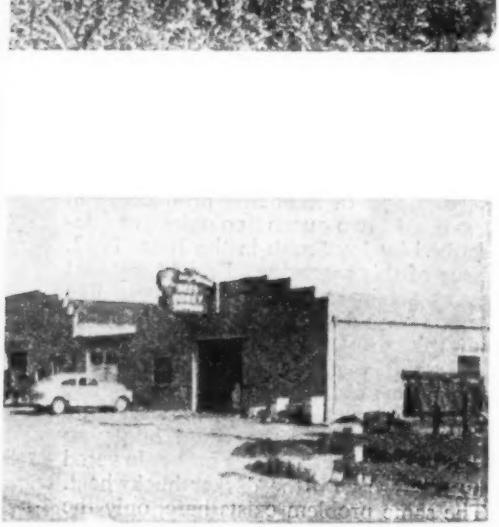
dark honey in this case being mint which is grown very extensively here. Alfalfa and spearmint, both white honeys, begin yielding heavily in July while the regular mint comes on in August and, to say the least, many tons of alfalfa honey are darkened by the mint. However, the price of mint honey is only slightly lower than that of alfalfa and as it yields so copiously it more than pays its way with the beekeepers.

It is common practice for many producers to save over entire supers of mint honey for June feeding. As it is very rich in minerals, it helps produce superior queens both in August or in June when many new queens are reared in the increase. Perhaps if every queen producer would produce the same quality as the best ones, many more caged queens would be sold in this area. After several seasons the producer learns who are the best breeders and gives all his business there. Usually the best queen breeders have a large backlog of orders in May and June. A reliable queen breeder surely contributes his share in producing the nation's honey crop. In fact, I think he is the most important factor of all.

Spearmint as far as the eye can see. This plant yields a very aromatic white honey.

Good Honey House Essential

A feature in every honey house out here is a hot room where entire truckloads of honey are warmed to about 100°F. before extracting. This is a necessity because of the low water content of the honey and the cool nights. In a word, these hot rooms are great time savers and help reduce comb damage in the extractor.



Huge honey house of Jim Bunch located at Sunnyside, Washington. The bees built this honey house.

I never saw such a diversity of extractors as out here. They range from the regular radial to automatic basket types and even extractors in which one puts combs, supers, and all. They all seem to work well enough.

As in all irrigated valleys poisoning and American foulbrood are always a threat. All colonies are usually given four inspections per year. This requires a great number of man hours of skilled labor. The careless beekeeper is soon written off by a vigilant state inspection system.

As yet the newer type of EFB has not made its appearance here as it has in Colorado and other Mid-western territories. Nosema has never been a problem here. Perhaps the beekeeper's biggest enemy here is the incessant cold winds of spring and winter. Such winds are a problem in every warm valley in the west as the cold air from the snow-covered ranges pushes into the warmer air of the lower strata. The complete lack of a windbreak in the foothills also adds to the drawback. Bees located near the rivers in the native timber always winter much better than those on the higher elevations. However, as the population concentrates along the river it becomes increasingly difficult to rent bee locations.

Airplane Dusting Bad for Bees

Another serious enemy of the beekeeper here is the airplane duster. I have seen entire apiaries reduced to nothing at the moment they were at peak strength just prior to the honey flow. This is very discouraging even more so because of the callous attitude of the duster. His work is so highly remunerative that he nonchalantly adds several stiff fines to his operating expenses and still remains with a substantial profit for his work.

There are existing state laws governing the time of dusting but they are vague to the extent that a hard headed airplane duster is not overly impressed.

Moving entire apiaries is second nature to the producers of the Yakina Valley. Everyone moves at least twice a year, mostly more.

To cite an example, in '52 the Mabton mint area contained six commercial bee yards. The mint crop was very large so, next year there were 26 bee yards in the same area. Suffice to say that no producer has a clearly defined "territory", as the eastern beekeepers like to say. Out here you put down a yard wherever you fancy and if you do well you can be sure that there will soon be other yards one-half or even one-fourth mile from yours or just across the road.

Nights are always cool so that only very strong colonies can take foundation.

As far as I am concerned this is a fine place to live and work but the beekeeping is a little crowded.

To my beekeeping friends in Central and South America, who are avid Gleaning's readers, allow me to say; Estimados lectores mios; si Ustedes tuvieran la fineya, la bondad de escribvime sobre asuntos apicolas de sus paises, me apresuraria en hacerles respuesta idonea, en seguida con todo corazon. Ojala que no se equivoque el redactor.

XUM

Honey

Color, Flavor, and Aroma

by VERN G. MILUM
University of Illinois

IN THE FIRST article, it was pointed out that the chief changes in honey are due to moisture absorption, granulation, fermentation, discoloration or darkening and loss of or masking of the original delicate flavor and aroma. In the preceding articles we covered the causes and prevention or control of fermentation and granulation which in turn may, if not properly done, seriously darken honey and damage its flavor and aroma. Let us therefore first inquire into the primary factors listed in the first article which give various honeys their original color, flavor, and aroma. Known contributors to the original color of honeys are various plant pigments, tannin bodies, chlorophyll derivatives or decomposition products, and colloidal particles. A sugar derivative, anthocyanin is reported by Phillips[1] as being responsible for the rose-red color of white clover at high altitudes and the dark purple of willow herb honey of Alaska.

The original colors and flavors of honeys seem to be rather closely associated, for in general, light colored honeys are mild in flavor and dark colored honeys are usually strong in flavor. However, some dark colored honeys have a delightful and pleasing flavor. Whenever honey is darkened, either by treatment or during storage, there is also a spoilage of flavor and a loss of or masking of the original aroma.

Among the plant pigments in honey is carotin (yellow), xanthophyll (yellow) and others that are bright yellow and dark green. Tannin bodies give honey a dark color as in buckwheat honey. Chlorophyll, which is the green coloring material of plants also affects the original color of honey. It is claimed that removal of colloidal materials from honey improves the color and clarity of honey. The apparent original color of honey may be influenced by the color of the glass container, the quantity and color of light behind the glass container, and the mass or volume of honey through which the light passes. Honey in a tall, slender jar thus will appear to be lighter in color than the same amount of honey in a short, squatty jar. The taller jar perhaps has a slight advantage in honey exhibits, but the short jar is more desirable because of its larger opening, compactness, and lessened tendency of tipping. This variation in apparent color presents a problem to the packer who bottles more than one size. It is reported that some use a darker blend for smaller bottles so that two or more sizes will have the same apparent color when displayed together on the retail counter.

Aroma and Flavor of Honey

The delightful aromas of honey are due to essencelike essential oils which give each honey of different flower source its characteristics odor or bouquet. Some of the essential oils are terpenes while others are aromatic aldehydes. The distinctive and pleasant odor of orange honey is attributed to an ester, methyl anthranilate, which has not been reported in any other honey. These substances are usually quite volatile and are driven out easily by heating which partially complicates the problem of care and preparation of honey for marketing. It thus follows that flavor

[1] Phillips, E. F. 1929. Sources of honey colors. Gleans. 57:362-365.

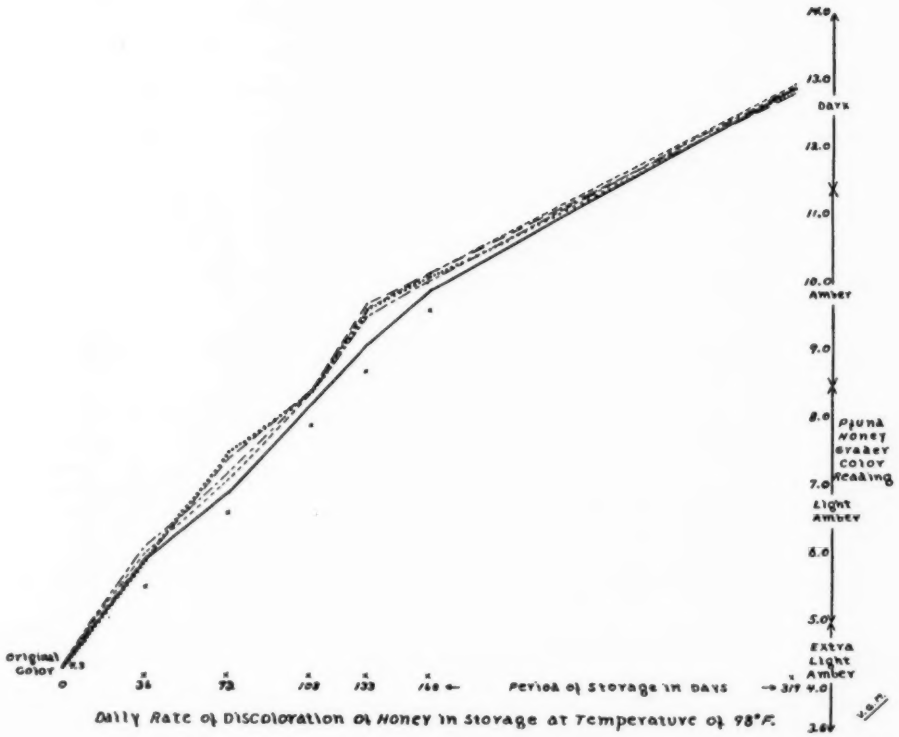


Figure 1—Rate of discoloration of a sample of honey, portions of which were processed at different temperatures and stored at 98°F. for 319 days, with color readings made at the time intervals listed at the bottom of the chart. Note the rate of discoloration was practically the same for all samples regardless of the degree of heating temperature and with the unheated sample. Note also that discoloration in storage is a continuous daily process, being greater in the early periods of storage and gradually leveling off, especially after 133 days. A smoother curve would have been shown had color readings been taken at intervals between 160 and the 319 days, the latter being the last reading.

and aroma, in a sense, give an indication of the treatment that they may have been given to honey if the usual flavor of honey from the original nectar source is known. Likewise, because of the relation between color and flavor of honeys, an accurate designation by the honey producer of the color grade from a particular flower source gives an indication to the experienced buyer of the quality of the honey involved.

As to the effects of acids on the aroma and flavor of honey, the volatile acids, acetic and formic, probably affect the aroma to a slight degree, while both of these and the nonvolatile acids —malic, citric and succinic—have a small effect on odor and flavor, they themselves being reduced in intensity by the presence of minerals. In some honeys, such as buckwheat, an instringent taste is due to a coloring matter, tannin or tannic acid.

The odor and flavor of honey seems to be more concentrated in honey fresh from the comb and in warm honey. Too much heating may drive off a large amount of the natural bouquet. In eating granulated honey, it takes longer to get the true taste since the crystals have to be dissolved to get the full effect, the larger the crystals the greater being the delay. Occasionally honeys are actually unpalatable, some having a bitter taste that is present when fully ripened but later may disappear. In general, honeys that are dark in color are strong in flavor while light colored honeys are mild in flavor but there are some exceptions to this general rule.

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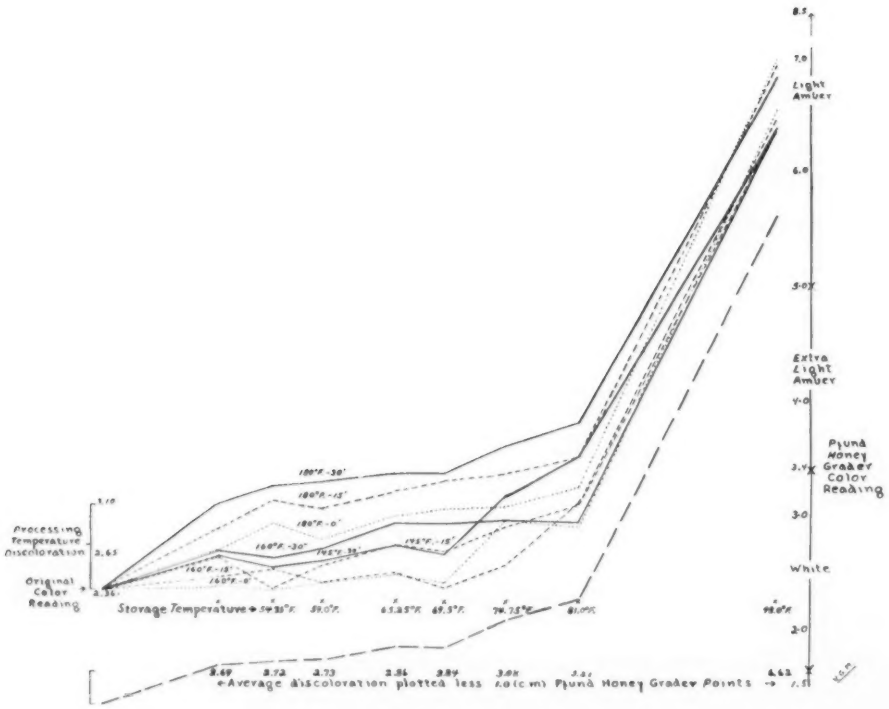

Figure 2—Variation in discoloration of similar portions of a honey stored for 168 days at variable constant temperatures, with each line representing a particular processing temperature and time, as indicated by the figures above the line, i.e., that at the top being the color readings of the samples processed at 180°F. for 30 minutes before being stored. The combined average discoloration for all of the variously heated portions at each storage temperature are shown by the larger broken-dash line at the bottom. For the purpose of distinction it has been plotted relatively lower (one point—Pfund color reading) with the average discoloration of all the samples at each storage temperature indicated below the line. Note that there was a general increase up to 70°F., then a somewhat greater increase between 70 and 80°F., and again excessive discoloration at 98°F. storage. (See also Figure 1 of previous article.)

Discoloration and Loss of Flavor and Aroma

Under normal conditions of marketing, section comb honey, if marketed early, usually reaches the consumer's table in a condition quite similar as to color, flavor, and aroma as when originally produced. In extracted or liquid honey production other factors are commonly involved.

With honeys, likely to granulate, extracted honey is usually heated to 155-160°F. in a water bath and held at this temperature for approximately 30 minutes, then strained and placed in containers. With certain honeys showing a lesser tendency to granulate, i.e., those relatively high in levulose such as tupelo, bluevine, and most fall flowers, a lower heating temperature may be satisfactory. For honeys of particular flower sources, producers may learn through experience the minimum heating temperature and time required to prevent granulation for the period of time desired.

With proper precautions, the packaged extracted honey may be changed but little from the natural condition in which it was thrown from the combs in the extractor. But serious discoloration and loss of flavor and aroma may

result from processing if direct heat rather than a water bath is used or even if the latter is applied for too long a time.

Heating honeys to temperatures higher than 160°F., even to 200°F., will not cause serious losses, provided the higher temperature is reached quickly, and then the honey is strained and bottled and immediately cooled. Hot honeys should not be placed in closed cartons or cases and these placed in piles where stack heat has been observed to be maintained for days and even weeks in other products. With honey, this stack heat may result in more serious discoloration and loss of flavor and aroma than that from the original heating. The effect of prolonged temperatures, even of ordinary room temperatures, are shown in the accompanying figures.

Heating honey in a partially closed container is helpful in retaining the original aromas and flavors of honey which are due in part to the essential oils which may be driven off by the application of too much heat over too long a time. The amount of time involved in heating honey may be greatly reduced by providing some sort of mixing or stirring, but the agitators should be run at slow speed to prevent incorporation of air bubbles.

Some bottlers allow strained honey to cool for an extended time to reduce the amount of air bubbles incorporated but this may permit the inclusion of dextrose crystals from the air which may later result in early granulation. Thus it is better to bottle the honey while hot, using a gooseneck filler or allowing the hot honey to flow down the side of the container to prevent the honey piling up on itself and incorporating air bubbles. With any system the packaged product should be quickly cooled after sealing the container.

School Children Eat Honey Every Day

At the Brookneal School, Brookneal, Va., 351 children eat honey every day and have been eating it every day for the past two years. They started eating honey when it was free and most everyone learned to love it, even first graders who had never tasted honey before in their lives. Since we started using honey on the tables we have made it free to every one and those people who bring lunches from home may have honey to go with them without cost. We have learned to make honeyshakes and have taught the local drug store to make honeyshakes.—Morrison Myers, Principal.

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BEES. Foraging for Nectar and Pollen

FROM OUR point of view, foraging is the bees' most important activity. While foraging, they perform their indispensable pollination service and collect the raw materials for the manufacture of honey and beeswax.

Which Bees Do the Foraging?

Both sexes of bees, except for certain members of the Apidae, forage in the field. Males take nectar or other sweet liquids for their own immediate energy needs (Fig. 1). They also consume some pollen, but this they probably take in accidentally with the nectar. In the Apidae there are nonforaging individuals in all groups except the nonsocial **Euglossa** and related genera. Male, worker, and queen bumble bees visit flowers, but after the first brood of workers reaches adulthood the queen spends most of her time in the nest. The female of the cuckoo bumble bee (**Psithyrus**) likewise does little foraging after she finds a bumble bee colony that will tolerate her. Queen stingless bees don't forage at all, but the males feed from flowers as well as in the hive. As any beekeeper knows, neither male nor queen honeybees are ever

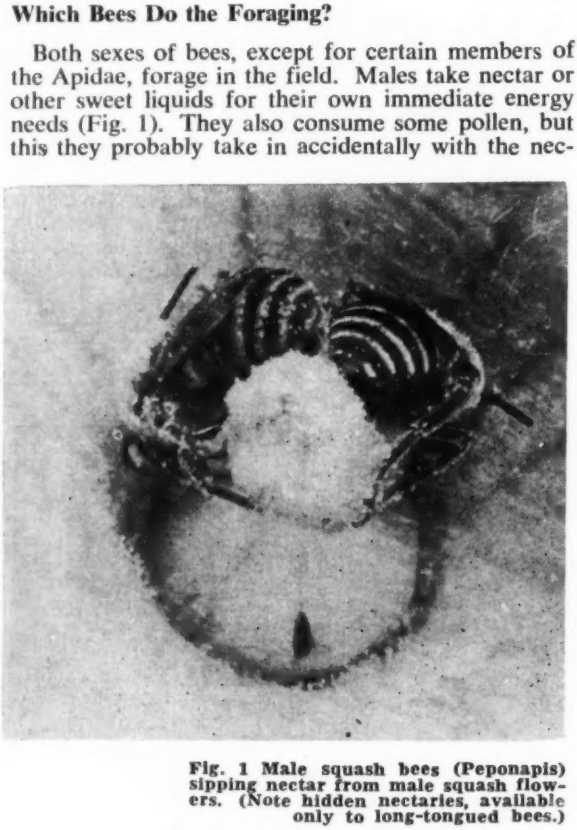

Fig. 1 Male squash bees (Peponapis) sipping nectar from male squash flowers. (Note hidden nectaries, available only to long-tongued bees.)

The most important activity of the honeybee is foraging and in that capacity performing the all-important service of pollination. This is the last of this series on "Bees".

GEORGE E. BOHART and WILLIAM P. NYE

U.S.D.A., Agr. Res. Serv., Entomology Res. Branch, in cooperation with Utah Agricultural Experiment Sta.

found on blossoms. They can't even feed themselves in the hive and must take food from the tongues of workers.

Male bees, regardless of species, never carry pollen or nectar back to the nest. Consequently, you would expect them to be less diligent than females in their foraging behavior, and therefore poorer pollinators. However, males can spare more time for foraging than females because they don't have to build nests or care for the young. As you might expect, they spend a lot of this extra time seeking females instead of visiting flowers.

Males are not always interested in the same flowers as their sisters. They don't visit such flowers as roses, poppies, and various wind-pollinated plants that produce little or no nectar. On the other hand, many of them visit a wider range of nectar-bearing plants than the females. Since neither male nor female cuckoo bees store food, they have similar foraging habits (Fig. 2). The advantage as pollinators actually goes to the male cuckoo bees. They don't have to spend as much time looking for females as the females do looking for the nests of host bees.

Fig. 2—A cuckoo bee (Triepeolus) taking nectar from the tiny, aggregated florets of a sunflower.

How Bees Forage

Although female bees gather both pollen and nectar, they don't always do it on the same field trip (Fig. 3). Sometimes the flowers are so constructed that the bees are automatically coated with pollen while they are seeking nectar. When this happens, the bee usually packs the pollen into loads, but she is likely to return with a full crop of nectar before her pollen containers are full. At least this applies to honeybees.

Solitary bees collect pollen on a higher percentage of field trips than do honeybees or bumblebees (Fig. 4). This is because they usually make a pollen cake for their young that is only slightly moistened with honey. Furthermore, they have no need to lay up extra supplies of honey for dearth periods.

Solitary bees take sips of nectar for their immediate energy needs, and even species with a restricted pollen range may use a wide variety of flowers for this purpose. After visiting such flowers they may clean the pollen from their bodies. This is a common occurrence with narrow-ranging bees, such as many **Andrena,** but even honeybees scrape themselves bald trying to get rid of cotton pollen after visiting the flowers for nectar.

Nectar "Thieves"

The partnership between bees and flowers is broken when the bees gather nectar without contacting the pollen-bearing structures. Honeybees soon learn that they can take alfalfa nectar faster by entering the flowers from the side than by going in straight and getting mixed up with the sexual column. Fortunately for the alfalfa seed grower, every nectar collector trips at least a few flowers by accident. When bumblebees cut holes at the base of flowers with long corolla tubes (such as red clover), they are actually harmful, since other bees, including honeybees, are quick to take advantage of this "illegal" entrance for nectar "thieves" (Fig. 5).

Pollen and Nectar Loads

We have already seen the structures that bees use to carry pollen back to their nests (page 401, July issue). The three kinds of loads you are most likely to see are shown in Figure 6. The

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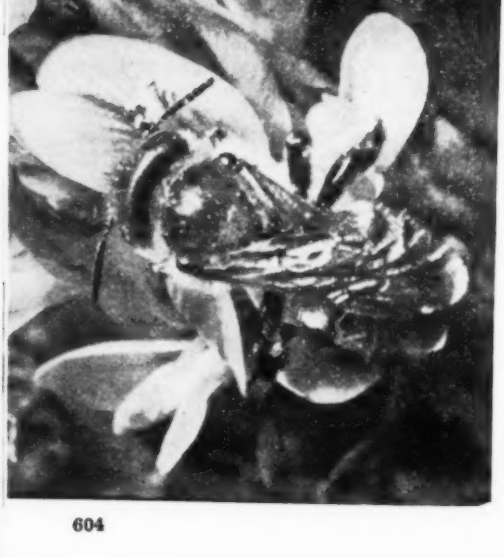
Fig. 3—Honeybee collecting nectar from alfalfa. She can do this on alfalfa without contacting the pollen.

Fig. 4—A leaf-cutting bee (Megachilidae) collecting pollen from alfalfa. She may take pollen only or remain at the flower to take some nectar.



halictid bee (related to the alkali bee) carries pollen on both her abdomen and legs. She can completely provision a cell with two or three such loads. All bees carry their nectar in an enlarged section of the fore gut known as the honey stomach. **Hylaeus,** usually considered the most primitive of bees, carries both her pollen and nectar in the honey stomach.

Bees and Evolution

Botanists and entomologists concerned with evolution have always been greatly interested in the flower habits of bees. The evolution of floral structures has been shaped by the plant's need to take advantage of pollen-carrying agents. Since bees are the most important of these agents, it is not surprising that they have played such a strong role in the evolution of flowering plants. It is equally true that flowers have played a strong role in the evolution of bees. Many of the specialized structures of bees are for the purpose of gathering nectar or pollen from particular kinds of flowers. There has been a lot of argument as to which take the lead in the evolutionary spiral, flowers or bees. Did bees develop long tongues to reach the nectar in flowers with long corollas, or did flowers develop long corollas to take advantage of long-tongued bees? The probable answer is that somehow both forms of adaptation took place more or less simultaneously and very gradually.

Host Ranges

Some kinds of bees limit their food gathering to a few genera or species of flowers. Others are reported to be absolutely dependent upon one species of flower, at least for pollen. For example, the common northeastern halictid **Dufourea novae-angliae** Vier. is reported to collect pollen only from pickerel weed (**Pontederia cordata**), whereas its close relative, **Dufourea monarda** Roh., is confined to the horse mints (genus **Monarda**). All degrees of host specificity can be found among bees, from the monotonous diets cited above to the almost universal tastes of the honeybee.

Every family of bees has some species or genera with narrow host ranges and others with wide ranges. The fami-

ly Apidae seems to have the highest percentage with wide host ranges and the Andrenidae the highest percentage with narrow ranges. Often genera with many species (for example, **Andrena, Perdita,** and **Dufourea**) have a high percentage of species with restricted host ranges. This is probably because a bee with a tendency to limit its host range becomes isolated from others of its species as soon as it switches to a new host. Isolation is one of the prerequisites for the origin of new kinds of living things.

Constancy of Bees

You can't predict the selectivity of individual bees from the host range of the species to which they belong. Some of the most wide-ranging species may be highly selective as individuals. This individual behavior is spoken of as the constancy of the species. Although the honeybee appears to have the widest host range of any species of bee, individual honeybees usually visit only one kind of flower on a field trip and remain constant to it in one small zone until the flowers in that zone become scarce or non-productive. On the other hand, many of the solitary species with much narrower host ranges than the honeybee are relatively promiscuous on individual field trips. We collected an alkali bee (family Halictidae) with as many as six kinds of pollen on its legs. This represented nearly the entire host range of the species in the area where it was collected. Out of 20 loads of pollen that we examined from the nest of a bumblebee (**Bombus morrisoni**), only two were from a single source and five were from at least four sources.

Bees with a wide host range have advantages and disadvantages as pollinators. They are useful for a wide variety of crops but, if you are interested in only one crop, too many of them may forage on competing plants. Ideally, each crop should have a good supply of pollinators specially adapted to it. Since most of our economic crops have been introduced from the Old World, it would seem logical for us to explore the possibilities of introducing specially adapted pollinators.

Bees (such as the honeybee) that are host-constant as individuals have an advantage as pollinators over those that are not. It does a plant no good to receive pollen from unrelated species. Furthermore, a bee spending its time on competing plants is of no use to the crop to be pollinated.

Fig. 5—A bumble bee cut this hole at the corolla base of a red salvia flower.

Botanists have observed that bee-pollinated plant genera are apt to develop many closely related species in the same area. This they explain by the isolation afforded a mutant strain when individual pollinators don't visit back and forth between it and the parent type.

Flight Range

Flight range undoubtedly varies greatly with the kind of bees, but very little is known about flight ranges of any except the honeybee. In general, larger bees are stronger and faster fliers than smaller ones. It is logical to assume, therefore, that flight range tends to increase with body size. Honeybees fly up to 10 miles for nectar when necessary and bumblebees can probably

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travel farther. Even alkali bees, which are only about two-thirds as large as honeybees, have been seen to forage as far as seven miles from their nesting site.

Honeybees have a strong tendency to spread themselves uniformly over the available forage within a mile of their colonies. Within this range, density and attractiveness of the forage are the main factors controlling density of the bee populations. Beyond it, distance from the colonies must affect the concentration of bees, but evidently not as strongly as many of us have thought. By contrast, alkali bees concentrate first on the forage nearest to their nesting site and gradually fan out as it becomes pollinated and goes to seed. You can easily see the contrasting effects of these two types of dispersal on the pattern of seed development.

Foraging Radius

Most biologists assume that the flight range of the insect pollinators is the important factor governing the amount of crossing that takes place between two varieties growing a certain distance apart. However, a much more important consideration is the insect's radius of operations after it starts foraging. Except for a few scouts and wanderers, individual honeybees cover only a few square rods while actually foraging and return to the same area time after time. This is an advantage for the seed grower whose crops must be kept pure. He doesn't need to worry about large isolation distances if honeybees are the principal pollinators, and he can usually tolerate a few chance crossings by scouts or wanderers. But the same limited working area is a drawback for the grower of self-sterile tree crops. He must interplant rather closely with pollinator varieties to insure that enough crossing will take place.

Many of the other kinds of bees are likely to wander around more than honeybees. Parasitic bees are homeless creatures and move their foraging areas freely. The same is true, in general, for male bees, but those of some species establish a perch from which to dart after females. Such males probably forage close to their perches. Little is known about the foraging radii of the majority of bees. Some of the **Anthophora** have been found to return time

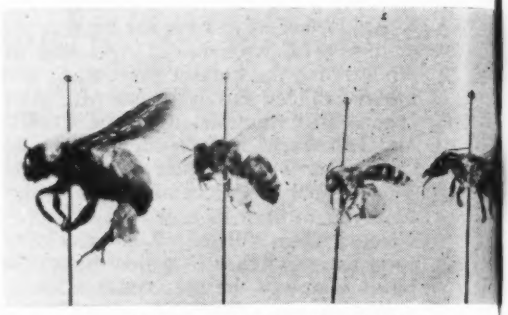


Fig. 6—Bumble bee and honeybee (pollen carried as a moist mass on the hind tibia), Melissodes (Anthophoridae) (pollen carried as dry grains between the hairs on the hind tibia and first tarsal segment), and leaf-cutting bee (pollen carried as dry grains between hairs on the under side of the abdomen).

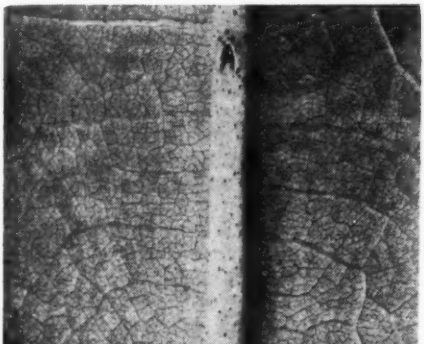
after time to the same small working zones. On the other hand, we have seen queen bumble bees forage across an entire apple orchard. Being young queens, they probably had not yet established their nests and this may have accounted for their wandering behavior.

Non-floral Nectar Sources

Although bees get most of their nectar from flowers, some species are not

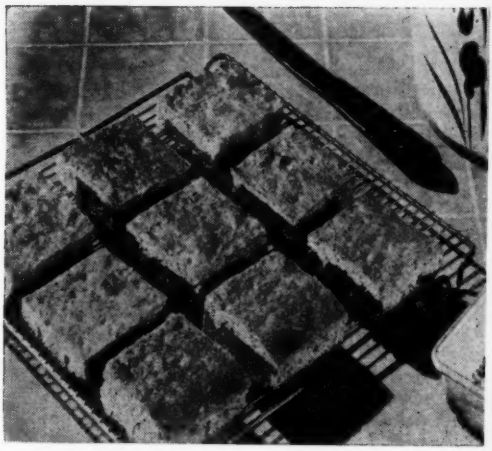
(Continued on page 639)

Fig. 7—Cotton leaf with extra-floral nectaries.



HONEY COOKIES

by MRS. BENJ. NIELSEN
Aurora, Nebraska



Honey butterscotch party squares.—Photo courtesy of Kellogg Company.

BREATHES THERE a cook with soul so dead that she does not welcome another good cookie recipe? And, if you have never tried honey in cooking, cookie making is an excellent way to become initiated. Simplicity itself to mix are these chosen honey recipes, a delight to smell as they bake, and results that actually improve with lasting — if you can keep any that long. As ingredients have a chance to mingle and merge, the subtle honey flavor emerges and the cookies remain fresh tasting with superb flavor. Lower baking temperatures are best, as a rule, with careful watching, as honey tends to scorch easily at higher temperatures.

You will decide that these are well worth the watching! All of these delights will keep fresh for days and actually improve in flavor. Try these and then go on to happy creations of your own!

Honey Butterscotch Party Squares

One-fourth cup butter, ⅔ cup honey, 1 egg, 2 cups sifted cake flour, 2 teaspoons baking powder, ¼ teaspoon salt, ½ cup milk, 1 teaspoon vanilla, 1 egg, ¾ cup brown sugar, ¼ cup nutmeats, and ½ cup bran.

Blend butter and honey thoroughly; add egg and beat well. Sift flour with baking powder and salt and add to first mixture alternately with milk. Beat after each addition until smooth; add flavoring. Spread to ⅛-inch thickness in greased sheet pan. Beat egg and brush over top. Combine sugar, nutmeats and slightly crushed bran; sprinkle over top. Bake in moderate oven, 375 degrees F., for 20 minutes. Yield: 35 squares 2 inches in diameter (10½ x 15½-inch pan).

Peanut Butter Honey Crackles

One-half cup shortening, ½ cup peanut butter, ¾ cup firmly packed brown sugar, ½ cup honey, 1 egg, 1¾ cups sifted flour, 1¾ teaspoons baking powder, ½ teaspoon salt, chocolate bits, 3 tablespoons granulated sugar, and ½ teaspoon grated orange rind.

Cream together thoroughly the shortening, peanut butter, brown sugar and honey. Beat in egg. Sift together flour, baking powder, and salt. Stir dry ingredients into first mixture mixing until well blended. Shape into 1-inch balls, inserting a chocolate bit into center of each ball and reshape. Combine granulated sugar and orange rind and roll cookies in this mixture. Place cookies 2 inches apart on ungreased cooky sheet. Bake in a 375 degree F. (moderate) oven, 12 to 15 minutes, or until lightly browned and crackled. Cool on cake racks.

Honey Ginger Cookies

One cup shortening, 1 cup sugar, 1 teaspoon salt, 1 teaspoon ginger, 1 teaspoon cinnamon, 1 egg, unbeaten, 1 cup honey, 4 cups sifted flour, 1 teaspoon soda, and ¼ cup buttermilk or sour milk.

Combine shortening, sugar, salt, spices, egg and honey and beat until smooth. Sift flour and soda together; add ½ of flour to creamed mixture and blend well. Add buttermilk and blend; add remaining flour and mix well. Measure out level tablespoons of dough on greased baking sheets. Flatten cookies by stamping with a flat-bottomed glass covered with a damp cloth. Sprinkle with sugar. Bake in moderate oven, 350 degrees F., 12-15 minutes. Yield: 6½ dozen cookies.

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Editorials

National Honey Week

WE NOTE from the calendar supplied by the American Honey Institute, Madison, Wisconsin, that National Honey Week this year begins October 28 and continues until November 3. This week comes around once a year to put special emphasis on honey promotion. It comes at a time of the year when the weather is turning cool and people begin to think about honey on hot cakes, waffles, and pancakes.

Honey recipes, cookbooks, leaflets and attractive counter cards are available from the American Honey Institute at a very nominal cost for those who wish to prepare window displays during Honey Week.

Anything that can be done to make people more honey conscious and to increase honey sales will be of benefit to our industry. We should cooperate with the Institute in attempting to raise the per capita consumption of honey to a higher level.

Mrs. Harriett M. Grace, Director of the Institute, is doing a splendid piece of work. May we give the Institute our moral and financial support.

Don't Let Bees Starve

THERE MAY BE a tendency, in some sections of the country where bees have stored little, if any, surplus honey and where there is not likely to be much fall honey, for beekeepers to neglect their bees. We know how discouraging it is not to secure surplus honey, after having spent considerable time with bees during the season. As a rule one extreme follows another. Where the crop was poor this year it may be good next year.

It does require some optimism to buy sugar for feeding bees to supply winter stores. However, this is the only thing to do, if colonies are short on stores and we wish to winter them. It is possible, of course, next spring, to install packages with queens in hives in which bees died during the winter for lack of food.

Colonies in areas where goldenrod and aster are abundant, will likely store enough honey for winter food and possibly some surplus. It is hoped that all beekeepers may give their bees proper attention this fall, which means providing an adequate amount of stores for each colony and the necessary protection against the elements, where winters are cold.

If sugar syrup is to be fed, the feeding should be done before cold weather sets in, so that bees may have time to store and ripen it properly.

The Miller Bill

SOME BEEKEEPERS throughout the country may not be aware of the passage of the Miller Bill and how it affects beekeepers. Tolerances have been established limiting the amount of insecticide residues from food products sent from one state to another. This should tend to reduce the loss of bees due to indiscriminate dusting of insecticides.

It is understood also that food inspectors will be added by the Food and Drug Administration in order that they may inspect honey in apiary houses or honey processing plants.

Some years ago it was not uncommon to find a few parts of wings or legs of honeybees in honey offered for sale. At present, the presence of any parts of dead bees in honey is sufficient to have the honey condemned.

Even though it is a fact that bacteria which cause diseases in human beings cannot grow in honey, and this by the way is very important for our industry, beekeepers should make a special effort to have clean honey houses and to turn out good quality well-strained honey that is a credit to our industry.

Beekeepers who have sloppy or ill-kept honey houses had better clean up, or else.

What Makes a Honey Flow?

BEEKEEPERS WOULD like to know the answer to this question. We have noted that in a comparatively restricted area there are differences in the amount of surplus honey apiaries will produce. To all appearances locations are about the same. It is possible, of course, that local rains contribute to this difference in honey crops. Rains usually come from the West and fall in streaks. Occasionally, we have noticed fields on one side of a road water-soaked while those on the opposite side were dry. Then, too, there apparently is a difference in soils. Some are better than others for nectar secretion.

Apparently there is a great deal to learn about nectar secretion. We sometimes think we know what makes a honey flow—then again, we are not too sure about it.

It would seem that bees scattered over any area in comparatively small apiaries would do better than having the bees in larger yards. Perhaps some day we will know more about nectar secretion than at present.

Use Your Head to Save Your Back

MOST OF US are creatures of habit. We are likely to do the same old thing in the same old way each year. Not so long ago while watching a beekeeper manipulate his colonies, we asked him why he performed a certain manipulation. The reply he gave wasn't at all satisfactory to us.

It would appear that most beekeepers over-manipulate their bees. It is necessary, of course, to do the right thing at the right time and this is sometimes difficult, because of erratic weather.

Sometime ago a beekeeper in the West wanted us to tell him exactly what he should do each week of the honey season. Of course, such would be impossible. Apiary management here in eastern Ohio is somewhat different from what it is in western Ohio as we found out after having operated apiaries in western Ohio for a number of years. However, the fundamentals of beekeeping are the same throughout the country and throughout the world, for that matter.

In the production of extracted honey, in the matter of supering, we have found that the main thing to keep in mind is putting on supers in ample time, a little before they are actually needed. We super on top instead of lifting each pile of supers off, in order to place the new super directly above the brood chamber, then lifting the pile of filled and partly filled supers back on. Top supering avoids an enormous amount of work.

There are times during an intensive swarming season when it may be necessary to raise some of the brood out of the brood chamber into a super above the queen excluder to avoid over-crowding or congestion in the brood chamber. However, if an ample number of supers have been put on reasonably early, such congestion is not likely to occur.

If during the season, each beekeeper would stop long enough to ask himself "Just why am I doing this?", he perhaps would not perform some of the manipulations he planned to carry out. In other words, he would be using his head to save his back.

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News Reel

FLORIDA BEEKEEPERS—Left to right: John D. Haynie, Gainesville, Florida; Frank Robinson, Gainesville, Florida; John Demuth, Umatilla, Florida; G. H. Cale, Jr., Hamilton, Illinois; Jourdain Demuth, Umatilla, Florida; Garnett Puett, Hahira, Georgia.—Photo by Roger A. Morse.

EXECUTIVE COMMITTEE of the American Beekeeping Federation, Inc.: Left to right: Front row, G. C. Walker, Jr., Pharr, Texas; H. A. Schaefer, Osseo, Wis.; W. W. Wicht, Hattiesburg, Miss.; Leslie Little, Shelbyville, Tenn. Left to right, back row: Ray Reed, Vice-Pres., Los Angeles, California; H. R. Swisher, Springfield, Ohio; S. J. Watkins, Pres., Grand Jct., Colo.; Robert Banker, Cannon Falls, Minn., Sec.-Treas.; L. R. Budge, Malad, Idaho. — Photo from H. R. Swisher.

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BEEKEEPING SHORT COURSE—For some years Pennsylvania State University has been holding a Summer Beekeeping Short Course at State College during an entire week. This past summer the instructors were Dr. E. J. Anderson, W. W. Clarke, George Rea, and John Buchanan. The above picture was taken following one of the sessions.

1956 OFFICERS of the North Georgia Beekeepers' Association—Left to right: W. H. McCain, 2nd Vice-Pres.; R. R. Petree, 1st Vice-Pres.; Dr. E. K. Patton, Pres.; Mrs. James Rochel, Sec.; F. B. Leary, Treas.

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Urgent Message to All Farmers Who Grow Alfalfa or Clover

WE, THE UNDERSIGNED, are deeply concerned about the proposed spraying of alfalfa and clovers for insect control as promoted by V.P.I. per press releases and circulars distributed by County Agents. (We also deplore the fact that V.P.I. released these recommendations without any advance warning to the beekeepers' industry. Only by insistence and telephoning, have we obtained some belated postscripts to their literature alerting farmers to the spray menace to bees).

We are farmers, too. We earn our livelihood through the rugged activity of keeping bees. We are aware of the farmers' difficulties in making farming pay. The bee business meshes with general farming, is dependent upon prosperous farm conditions. Farming is dependent upon beekeeping, far more than most realize. We prosper mutually through good will and cooperation. Presence of bees in a community greatly aides farmers through pollination. Over 50 farm crops need the services of bees for the set of seed or fruit. The apple industry is almost entirely dependent upon bees for the set of fruit.

Over 1,000 Virginians are involved in beekeeping. The largest concentration of bees are in Clarke, Frederick, Warren, and Loudoun Counties. (Also heavy stocks in Berkeley and Jefferson Counties in West Virginia.) Loss of bees in this area would be a severe blow to the fruit industry, in addition to depriving farmers of free pollination.

The current menace to bees in this area if alfalfa and clover is sprayed with poison, arises from the presence of wild cress, chickweed, and dandelions which are blooming and attract the bees. The bees obtain the poison from working this bloom. If fields are not infested with these weeds, then there is no hazard.

If the farmer, before spraying, will give the beekeeper fair notice, he can probably find a safe place to move his bees—out of range of the poison. We feel sure that no farmer will willfully do anything that will destroy his neighbor's property or jeopardize it. If it is something that is his right, his need, to do, then he will alert his neighbor, give him a chance to protect himself.

We urge the following precautions, in the mutual interest of farmers and apiculturists, which will protect the bees from destruction and allow the farmer to protect his crops:

1. Every owner of bees should immediately advise his County Agent of their location, also, his name, address, and phone number.

2. We urge every farmer who plans to spray to inquire about the presence of bees in his community, to alert the owner of his intentions, allow the owner to inspect his fields to determine degree of menace, give the beekeeper time to move the bees out of range of the poison. (Exposure closer than 1½ miles is dangerous.)

3. County Agents are urged to obtain, post the names, addresses, and telephone numbers of beekeepers in their counties so that cooperating farmers can quickly reach them.

4. If only sparse growth of cress, dandelions, or chickweed are present in the fields to be sprayed, farmers are urged to chop same down before spraying. Eradication through selective weed poisoning is also advised. (This is good farm practice in any case, can easily eliminate the need to move bees out of the community when both the owner and the farmer would be the losers.)

Remember, the fruit grower, out of necessity, because of his concentrated plantings, has used sprays repeatedly and therefore has made beekeeping untenable within flight range of his orchards. So the orchardists must hire bees from the outside to get a set of fruit. The areas in which bees can be kept safely or profitably are constantly dwindling because of shifting farming practices. Increase in use and range of poison sprays continue to reduce this area. Also, other wild insects, serving as pollinizers, are being destroyed. In the foreseeable future, there can easily be no bees for hire or for free, either

for the fruit grower or for the farmer. Many food sources may cease to exist since they cannot be grown without cross-pollination. There is an old saying about live and let live, and an old warning about a word to the wise being sufficient.

We solicit and urge the cooperation of all farmers to the end that all segments of the industry may survive and prosper. If good sense is used and all cooperate, this menace to the bee industry can be reduced and controlled. We, the undersigned, with heavy personal investments at stake, also representing large segments of our industry regionally and nationally as well as locally, offer this statement as a summary of the beekeepers' interest and status.

(Signed) C. L. Burgess, Jr., President, Virginia State Beekeepers' Association - representing over 1,000 Virginia Apiculturists.

(Signed) H. L. Maxwell. Berryville, Va., Vice-President, Southern Beekeepers' Federation (of 13 states), representing Va. Also Director, representing Va. in the American Beekeepers' Federation (nationwide).

(Signed) A. D. Hiett, Vice-President, Southern Beekeepers' Federation, representing W. Va. (Martinsburg).

Mr. H. L. Maxwell, address above, is anxious to obtain case histories from insecticide damage from anyone who can supply the material, stressing that they make as full a report as possible, and also any information in regard to the developing trends with reference to future threats from this source. He feels that a crisis is developing in the East and that such a backlog of material will be invaluable in defending and supporting our case wherever the need arises.

"THE MAKERS OF HONEY"

by MARY GEISLER PHILLIPS

THERE IS SO MUCH interest in the study of bees and the producing of honey by 4-H groups, Boy Scouts and Girl Scouts, it is fortunate that a new book on bees has appeared by a talented author—the book, "The Makers of Honey"; the author, Mary Geisler Phillips, wife of the late Dr. E. F. Phillips, who was known over the entire beekeeping world. Mrs. Phillips has written many books for children but while her latest work is simply written, it has a charming style that captivates every reader, whether young or old. To the young, the entire story is beautifully told; to the older readers, new facts are presented, beautifully told in a style that cannot offend even a technical reader. Mrs. Phillips has lived a long and full life in a home where bees and beekeeping were discussed daily. The reader benefits from this long life-time of preparation.

Notice the sparkling chapter headings. Instead of "History of Beekeeping", Chapter 1 is "Bees of Long Ago"; instead of "Social Life of Bees", Chapter 11 is "Bees, Hives, and Men", instead of "Bee Behavior", Chapter 111 is "Family Life in the Hive".

Mrs. Phillips has been further prepared for the writing of this book by a long career. She graduated from the University of Pennsylvania with a degree in biology, she has been a high school teacher, an editor, radio script writer, Associate Professor, and now Professor Emeritus at Cornell University. Not the least important in her preparation is the fact that she is the mother of three sons and has five grandchildren.

The pages are enriched by 68 pen drawings by Elizabeth Burckmyer, who, herself, has a Master's Degree in biology. During the time her two sons were growing, she did free lance illustrating. She has been a teacher and is now Associate Professor of free hand drawing at Cornell.

This is a great book by a gifted author, enriched with illustrations by an entomologist who is also an artist.—Publishers, Thomas Y. Crowell Co., New York 16, New York. Price, $2.50.

FROM Foreign LANDS

Translated and Edited by Erika Barth

Von Frisch Finds the Bees!

WHEN Karl von Frisch, who it is generally known can interpret the dances of the bees, returned from a long trip, he found that his colleagues played a joke on him. He was told of a new feeding place for the bees that had been arranged during his absence, but no information concerning the new location was revealed. Instead, they told Dr. von Frisch to ask his bees where the new place was located.

Equipped with an angle and a stopwatch, the German scientist studied his bees in the observation hive and found the new feeding place with a deviation of only a few meters through his knowledge of the "language of the bees".

Reported by H. Appel in Westfalische Bienenzeitung. 1955. Heft 8.

Aid to Balding Beekeepers

HERE IS ANOTHER good bee story. In 1774 Joh. G. Kruenitz, "a pharmaceutical doctor", wrote a book in which the following recipe for baldness was mentioned:

"Bees as such can also be used externally. Let them dry, grind into a powder, add this powder to lizard-oil and mix into a kind of salve. This salve, rubbed on the head, will promote the growth of hair."

Der Osterreichissche Imker, 1956.

Swarm Control:

MAJOR W. GEOFFREY MOORE of Scotland has come up with a method of swarm control that may be of help to Gleanings readers everywhere. It is actually a variation of several well-known ideas which have worked very well. Here is how it goes:

(1) As soon as queens are seen, put all combs with cells, open brood, and some stores in the top chamber; the queen, sealed brood, drawn comb, foundation, and stores in the bottom chamber. Separate these two by a queen excluder for 24 hours to draw up the nurse bees to the open brood.

(2) After 24 hours, place two supers above the excluder and above the supers a board having a one-inch thick rim, with a 7/8-inch flight hole, through the rim in front, and a one-inch hole in the middle of the board, covered with a piece of queen excluder. Place the chamber containing cells, brood, etc., on top of this board, then, of course, a crown-board and roof. Reduce cells to one good cell before virgins hatch out.

Old flying bees will return to the bottom chamber and new flying bees will work the top chamber from the flight hole. If they have in mind to store surplus honey they can use the supers below them, entering through the one-inch hole covered with excluder.

A new queen will be reared and mated from the top chamber. If there is a good queen in the bottom chamber the new queen can be used elsewhere and the top and bottom chambers united again without any fighting, because both lots of bees have always been in touch with each other, meeting in the supers.

If the bottom queen is old or requires replacing, kill her and simply unite the two chambers, and the new queen will carry on.

This method of swarm control is reported to least disturb the hive, both in egg laying and in the storage of surplus honey. This system also allows the beekeeper to maintain a two-queen colony.

The Scottish Beekeeper.

Bees Take to the Wing!

ACCORDING TO a newspaper report a swarm of bees took possession of the wing of a Viscount airliner at Salisbury, Rhodesia, Africa. Despite all efforts of a local beekeeper the bees remained in possession for ten days. The beekeeper even tried using grated carrots which he claimed would be attractive to the bees. Eventually part of the wing was dismantled, and to the surprise of all, the bees had already departed.

The Scottish Beekeeper.

Live and Learn

by Propolis Pete

EVERY YEAR about this time there is a mystery around here. If I ever succeed in solving it, I should be able to jump my production by a goodly percentage. The mystery is that the bees never work the late summer flowers. They stay home in multitudes, hanging out in front of the hive, and consume the honey that they should save for next spring. Within easy range of the hive, there are acres of lima beans, a couple of varieties of goldenrod, loads of chicory along the roads and fallow fields, plus a goodly amount of cucumbers grown for the pickle trade. This year I even found something new for them. Six acres of sunflowers grown for seed, just a hoot and a holler across a woods to the south of here.

The first answer that presents itself is that while there may be flowers, that doesn't necessarily mean that they have nectar in them. That answer is wrong, because every bug that flies and consumes nectar is on them, unquestionably feeding. Another quick answer would be that the bees need more room. Wrong again. I have put empties on and the bees don't even go up to see what they look like. Maybe it gets too hot for them, because they hang out a lot during this period. That don't seem to be it either, because this year we have had quite a few cool days. The bees didn't hang out during the cool days — they just went inside and hung there.

Last year I had the same idea that it was too hot for them to work, so tried giving extra ventilation by staggering the bodies. All this did was to give the bees something to do — robbing each other. But the very fact that they were so quick to rob is an indication that it isn't only laziness. One theory that I don't have the facilities to test is that while the flowers may have enough nectar to attract insects that do not have a store of food in reserve, its sugar content is so low that the bees don't figure the results will be worth the effort to go and get it. They sure enough go after anything with a high sugar content, such as an open hive or a few drops of honey left where they can get at it. This funny business generally starts around the first of August, and lasts through the month. Then the bees go back to work and pick up speed until the aster flow lets them work as though it were the middle of June.

Actually I don't feel that I am losing anything. I take my honey around the first of August to catch the tourist and "summer people" trade. If I ever do get such a big crop of fall honey that I have to extract it, I would have another problem on my hands. I would not have enough honey to warrant making permanent connections to sell it out of town, and the local people wouldn't be able to buy it all. So, until the time comes that I have to squeeze every cent that I can out of my bees, it isn't worth the time and effort to dispose of it. But I would still like to have the answer to that problem.

Speaking of disposing of a honey crop, here's a peculiar situation. As you know, if you read this page regularly, I have always had a job producing comb honey to meet the many requests for it. Well, this year I did quite well for the first time, and the sections are going all right, thank you. But I have read about, and heard about, beekeepers who dispose of their entire crop by putting cut comb honey in jars, and filling the empty spaces with extracted honey. Many people have told me about how they see this pack on the road stands, and have asked why I don't do the same. Well, this year I did. I made up a dozen of the two and one-half pound square jars and three cases of the one pound jars with cut comb honey just as I have been told. And do you know what? I still have pretty nearly all of it. People who are asked to look at it marvel. They say that it is a pretty pack, most interesting, and so forth, and then proceed to buy either the sections or the straight extracted. In other words, cut comb honey for me is a first class flop. Now what can I do with what I have? You can't heat it to overcome crystallization, so I suppose that what is left over will go back to the bees in the spring, in one form or another. It's a good thing that I did not go overboard and make up a lot of it.

XUM

Let's Talk about Honey Plants

by HARVEY B. LOVELL, University of Louisville

Alsike Clover (Trifolium hybridum)

Alsike clover (Trifolium hybridum). In spite of the name hybridum, this clover is not a hybrid as was thought at one time. As you can see from the illustration, the stem is branched and leafy with several flowering heads. White clover, on the other hand, has only one head at the end of each naked stalk. The flowers of alsike clover develop a pinkish tinge especially as they mature. After pollination, each flower turns downward and loses its color and the honeybee, quick to note this "signal", leaves the old flowers alone, because she has learned that they secrete no more nectar.

In a government bulletin published some years ago by Everett Oertel, alsike clover was considered the most important honey plant in the following states: Indiana, Ohio, Maryland, Pennsylvania, New York, Massachusetts, and Maine, and very important in most of the northeastern states. It is just as important in many Canadian provinces. In the southern states white clover usually replaces it as the most important honey plant. For example there is very little alsike clover in Kentucky but white clover is very abundant.

Alberta, Canada. A. S. Bird writes me that nothing is more pleasing to see and smell than a great field of alsike clover in full bloom. "The bees work early and late when the days are warm and nights cool. Our season is short but very intense. We have 19 hours of daylight at the height of the season." He harvests as much as 200 pounds per colony from this and other clovers in a good season.

Ontario. Allan Brown of Peterborough describes the honey from alsike clover as white, with a heavy body and a delicate flavor. He obtains an average surplus of 35 pounds. The crop may fail once in five years due to drought.

A. W. Woodrow from Ohio State, Roscoe Wixson from Dundee, New York, W. J. Pemberton, Hallack, Minnesota, Wayne N. Smart of Rexburg, Idaho, and A. Burr Black, Inspector in Oregon, all write that alsike clover is a fair-to good honey plant in their localities and produces a light mild honey with an excellent flavor.

Maine. Mr. George S. Graffam of Whitefield combines beekeeping with horticulture. He writes that he has "three greenhouses full of growing plants, two of which are heated the year round." He considers wild cherry a delicious honey but adds that it is generally mixed with that from apple bloom, shadbush, and dandelion, and his best hives store no more than 20 pounds.

Fall dandelion (Leontodon autum-

nalis) produces a greenish yellow honey which is very slightly bitter in the fall and produces cappings with a greenish tinge. His main crop comes from alsike clover mixed with raspberry which produces a choice blend but a second crop in September is stored from goldenrod and aster. "Given fair ground moisture, cool nights, and warm days," reports Mr. Graffam, "the fall crop is often our biggest and grows in importance with the years. In dry years the fall dandelion is equal to or better than goldenrod as a honey source starting just a little later and blooming along with it. Early in September the wild asters begin to bloom lasting till frost and this fall honey varies with the seasons. Some years it is almost clear goldenrod — thick, yellow, tangy. Other years it contains enough fall dandelion to be almost bitter-strong.

A series of roadside stands in the southern states called Stuckeys feature a variety of honeys. I stopped at one in eastern Tennessee recently and found that they had orange honey in a variety of containers and also tupelo honey. In addition they had chunk honey from several places in southern Georgia including Waycross and Homerville. I tasted the jar from the latter place and found that it had the typical aromatic flavor of gallberry, one of the South's finest honeys. Athough this honey has a yellow-amber color, it is very much in demand for chunk honey because when pure it does not granulate. It is a good example of a fine honey which is not white, but which is much preferred by connoisseurs over white honeys in southeastern United States.

Spotted Knapweed (Centaurea maculosa). In a recent letter, Everett D. McIlwee of Wappingers Falls, New York, writes. "Enclosed is a sample of a plant that is growing in the gravel in great abundance around the edge of the airport. The bees seem to work it with the greatest enthusiasm. It is in full bloom just now (August 2) and continues for quite a while." Spotted knapweed which has composite heads of attractive bluish flowers, wiry stems, and very slender compound leaves, is common in many parts of Kentucky. Sometimes I have found no bees working it and at other times it is eagerly visited by honeybees for nectar. It is a close relative of yellow star thistle which is an important honey plant in California.

POISON SUMAC

by C. D. CANNON, Warren, Pa.

THE ARTICLE by George H. Rea about Lake Drummond and the Dismal Swamp in the December 1955 issue reminded me of a very unpleasant experience I had about 1911.

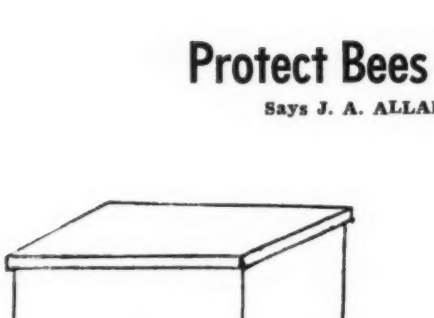
We lived in northeastern Ohio, where glacial lakes and small "sink hole" swamps are common. When clearing and draining one of these swamps, a neighbor boy pointed out a poison sumac tree and told us of the dire effects of it. This one was at least 20 feet tall and four or five inches in diameter at the base. We disposed of it safely, using all kinds of precaution. Sometime later we cut and handled several smaller ones without noting the danger, and my father, brother, and myself were badly poisoned. The effect was similar to that of poison ivy, but so bad it was real torture; and the medicine prescribed by the doctor was equally hot and painful. Among other things it contained a liberal amount of carbolic acid. I attempted to look at the bees while smelling of this medicine, and got another hot treatment.

This sumac is not common, generally growing in swamps, but not always. Beekeepers clearing out new sites for bee yards, or catching a stray swarm anywhere east of the Mississippi, may contact this plant if they are not familiar with it. A very complete description and pictures of this troublemaker are contained in Farmer's Bulletin No. 1972 which may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. According to the bulletin, there are only two poison sumacs in the U. S., and there are different scientific names used for the one in question. Mr. Rea used "Rhus venimosa", and the bulletin uses the name "Rhus vernix".

XUM

Protect Bees from Rodents

Says J. A. ALLARD, Coraopolis, Pa.



A wire shield to keep mice out of the hive.

MICE AND RATS can do a lot of damage to bees during the late fall and winter. Even with entrance reducers they will get into the hive by chewing or, if the entrance reducer is not a snug fit, a rat will take hold of it with his teeth and pull it out. I make all entrance reducers tight, when I put them in, by prying the hive bodies up and inserting a small twig or sliver of wood on top of the reducer so that, when I let the hive body back down, its weight will hold the reducer firmly in place.

I have had some odd experiences in this connection with rats and mice. One time in the fall I noticed a reducer pulled half way out. I proceeded to replace and anchor it as above described, little realizing that I was imprisoning a half grown rat in the hive. It so happened that a warm day followed and the bees stung Mr. Rat to death before he could chew his way out.

I didn't discover this until the following spring, and what do you think had happened? The bees had sealed his body to the bottom board by covering it with propolis; and there was no odor until I broke the propolis. Then — oh my! I had to replace that bottom board at once.

Last winter I discovered that a deer mouse had chewed his way into a hive and made a nest next to the bottom board, destroying a lot of comb and bees. I used a long stick to clear this debris from the bottom board itself. Incidentally Mr. Mouse ran out and escaped.

I baited some mouse traps with toasted cheese and placed them on the alighting board near the entrance. I also put in a new entrance reducer of very tough oak. In a few days the mouse had regained entrance by chewing out a dish shaped hole in the softer wood of the bottom board just beneath the reducer, apparently paying no attention to the traps.

I opened the hive, hoping to find him inside, but he was not there, so I cut a piece of flat tin and tacked it over the depression in the bottom board.

But he was not to be so easily discouraged. In less than a week he had gotten back in by gnawing at the oak entrance reducer. It was after dark when I discovered this. I was using a flashlight to check the hive entrances and discovered him sitting on the bottom board just inside the entrance. I placed a small board in front of the entrance while I figured out what to do.

I happened to think of a 22 calibre revolver I keep with my camping equipment loaded with fine shot shells for killing snakes. When I had procured the weapon, I returned and shone the

flashlight beam into the entrance. I found he had climbed to the frame bottom bars, and I could see only his tail, which was not a vital part of the target.

I rapped on the hive to stir up the bees and one or two of them apparently got him on the move; but he would not stay down on the bottom board long enough for me to get a good aim. I had taken the entrance reducer out and laid it on its side, closing all of the entrance except about five inches.

Once he stuck his head down between the bottom bars long enough for me to get a quick shot at him, but I was too hasty and too close, so I missed.

I kept rapping and scratching on the front of the hive but most of the bees paid no attention although those in the adjoining hive on the same stand became quite excited and one or two of them flew at the flashlight.

But the bees in the hive with Mr. Mouse apparently had gotten so used to hearing him chew that they seemed to take it as a matter of course. However, there were a few nervous guards that kept him moving about.

Finally I got my eye down to where I could see up between the frame bottom bars, and then I spied him again, sitting on a bottom bar at the extreme back of he hive.

This time I took careful aim before I fired. Down he tumbled to the bottom board. While he was kicking I saw a bee pounce on him and try to sting him. Pulling his body out with the aid of a long stick, I posed it at the entrance, returned to the house to get my camera, and took a flashlight picture, presumably of Mr. Mouse ready to go into the hive.

The deer mouse is a white-bellied, field type. I never kill one of these unless he is damaging something of value but I knew that this one, if left alone, would destroy the bees and combs of the hive which he had adopted as his own home.

I placed a new entrance reducer on the bottom board, then checked it a few days later to see if it had been disturbed, thinking there might be two mice involved. However, there was no further damage.

Next year I'm going to try a wire shield to keep mice out. I'll use one-quarter-inch square mesh wire and form it over the front of the hive, as illustrated. My hives are on stands about one and one-half feet above the ground. The protector will extend about four inches in front of the floor board, will be held in place by two small tacks, and will not interfere with the flight of bees on warm winter days.

It will be easily removable in the spring for storage so that it can be used year after year. Perhaps some bee-supply house can be persuaded to stock them.

I do not believe the idea of protecting the entrance reducer by facing it with tin is a good one because you would also have to fasten tin on the bottom board below the entrance. This would be too cold for the bees to traverse in cool weather. It would also reflect sunlight into the hive, causing the bees to come out too soon on cold mornings in the early spring.

One colony destroyed by mice represents a loss of $12.00 to $15.00 or more, and that will buy a lot of wire.

"Heaviest honey flow I've seen in years."

XUM

1350 colonies have been wintered successfully in this building.—Photo by Walter T. Kelley, Clarkson, Kentucky.

Wintering in an Air-Conditioned Building

by P. N. TRI, Humboldt, Minnesota

LOCALE and WEATHER determines the type of wintering to be used. Bees can be wintered without protection where the weather permits. In other areas much protection is necessary and the type must be determined by the beekeeper himself.

For a number of years my bees were wintered in potato cellars or by the tar-paper method. Since we have severe blizzards in winter especially in March this fine snow will sift into the small openings of the hives of tar-protected colonies. This is not good. The severe cold will prevent bees from shifting to honey and they may actually starve with honey round about them.

Bees wintered in potato cellars, etc., seemed restless. The ventilation was bad and the bees acted as though they were pent up, because the air was too dank for them. Go into any cellar and you will note a change of air conditions.

A ground level building was decided on to simulate natural conditions. This is necessary in a hillless country with high water level in the ground. The building for wintering bees was built with this in mind.

The building is 24 x 60 feet and is used solely for wintering bees. It has a 9 x 12 foot overhead sliding door, without windows, which permits loading or unloading within the building itself.

The building is framed of 2 x 6 inch lumber. The outside wall is doubled construction with good ship lap and 9-inch drop siding with a heavy grade of building paper between. The inside wall and ceiling are of 2 x 8 feet x ¾-inch sheets of black masonite tongued and grooved.

Within, the building was built with 8-foot studding and the ceiling raised 4 feet on the rafters. This gives more inside height and also allows for more

room for the large sliding door. This provides more air space.

There are no windows and no light enters except for artificial lights when needed. The building is wired for fan ventilation. This is very necessary, as the darkness promotes quietness.

You will note from the picture that ample provisions are made for ventilation. A few years ago ventilators were built at each end of the building — two at the rear and two at the front end at each side of the large door. There are also three large roof ventilators. All can be closed or adjusted if necessary.

At the rear end of the opposite side and above the ceiling or what may be called the attic a large fan was installed with proper outside opening. A thermostat controls it. The temperature at 36 degrees to 40 degrees seems best. Above that, restlessness starts and brood rearing may be hastened that way. The fan draws the air out of the building.

The building has artificial means of heating in case of very cold weather. The heater within is set so as to produce a desired temperature. The fuel oil flows in by the gravity system. Artificial heat is rarely used except in very cold weather.

This building has been in use for the past seven years. Last winter there were 1350 colonies in it. They were piled four high, the lightest on top. One can unload or load by manipulating the truck so that the last or first two colonies can be hoisted with ease, on truck level.

In this area when winter comes there rarely is a day when it thaws so bees have little opportunity for a cleansing flight. So it is with outdoor-wintered colonies. Outdoor wintered bees suffer more from the extremes of weather where those in the cellars are under a set temperature. A temperature of 40 degrees below is common in some winters. As a result, cellar wintering should be the rule. Cellars are the best places to keep bees in winter in this area.

The past winter began on November 1, and lasted until mid-April. The snow was heavy. The total fall was 101 inches. Floods were expected but alternate thawing and freezing caused the water to run off. It is a restful thought to know that your bees are in good care.

[Mr. Tri's bees are up near the Canadian boundary line. Winters get mighty cold in that country and it is little wonder he has to give his bees expert care and protection during the winter and the early spring months.—Ed.]

A Visitor from India

A. Rajagopalan, Mount Abu, India, paid us a visit recently. We got his picture as he stood beside the Gleanings scale hive. Mr. Rajagopalan is spending about 18 months in the U. S. and Canada to learn more about beekeeping on this continent.

He believes there is a great future for beekeeping in his country. More honeybees are needed to collect the immense amount of nectar available, also to pollinate agricultural crops.

It is hoped that in the near future the Indian Government may show increased interest in promoting beekeeping in that great country.

XUM

Asked & Answered

Reasons for Requeening

Q. Do young queens lay longer in the fall and start earlier in the spring, or what is the reason for requeening?

A. Young queens that begin to lay in July or early in August usually lay more eggs and continue laying a little longer in the fall than old queens. Under such conditions, therefore, colonies having young queens are usually in better condition for winter than colonies having old queens, since they have a greater number of young bees. It is doubtful if there is much, if any, difference between old and young queens as to the time they begin laying in the spring if colony conditions are the same. However, colonies that fail to rear enough young bees for winter because the queens are old are usually compelled to begin brood rearing earlier in the spring than colonies which had an ample number of young bees the previous fall.

During the peak of the spring brood rearing many old queens fail just at the time brood rearing is most desirable in rearing bees for the early flow, although many two-year-old queens do just as well as younger queens during this brood rearing period. This is especially true when the colonies are run for comb honey, since the queens are not worked so hard in comb honey production as they are in extracted honey production. In the South where the seasons are longer the queens wear out earlier, making it desirable to requeen every year.

Another reason for requeening is that of the improvement of stock. Many colonies are practically worthless on account of being poor stock. By requeening with good stock such colonies may be made profitable.

Drones from Unfertile Queens

Q. If a colony has a virgin queen but no drones will it rear drones to mate with her?

A. If the young queen can not mate within a few weeks after emergence, she will begin to lay unfertile eggs which produce only drones; but after such a queen begins to lay, she does not mate even though there are drones in abundance.

Fumigating Combs in Winter

Q. Will fumigating combs in the North in November prevent moths in the spring, provided they are stored in hive bodies and sealed at top and bottom?

A. For most localities it will not be necessary to fumigate combs at this time to prevent the damage from moths. All that is required is to expose them to freezing temperatures, which will destroy all of the eggs and larvae. However, freezing temperatures will not kill larvae of the wax moth if a large number of them have already developed before the advent of cold weather, since they would then generate sufficient heat to keep alive during ordinary freezing weather.

Eggs Laid by Queen Fail to Hatch

Q. I have a queen that has been laying for about nine weeks and none of her eggs will hatch. Will she ever become normal so that her eggs will hatch?

A. A few cases have been reported of queens whose eggs did not hatch for several weeks after she began to lay, and later their eggs hatched in a normal manner. However, it would not be safe to depend upon such queens ever becoming normal and they should not be left with the colony except for experimental purposes.

Leaving Honey on Hives After Honey Flow

Q. I leave the supers on the hives until I am ready to sell the honey. Is this a good plan?

A. That depends. In some cases leaving the honey on the hives a couple of weeks after it has been sealed results in the honey being thicker and finer in flavor. But if there should come a spell of cold, damp weather, driving the bees out of the supers and exposing the honey to a wide variation in temperature, it may absorb some moisture and thus not be as good as when first sealed. Again market conditions sometimes make it advisable to hold the honey until cold weather, at which time it would be difficult to extract it. As a rule, it is better to take the honey off the hives when it is fully ripened, then store it properly, rather than take it off in relation to the time of marketing it.

XUM

High Altitude Beekeeping

as tried by CHARLES W. LINDSEY, Sebastopol, California

NONAC HELD its annual blossom day celebration the first Sunday in May. Great crowds came to see miles of apple blossoms. I think I was the first beekeeper to rent bees for orchards in that valley, over a mile high. When I asked a large fruit-grower about renting bees for cherry and apple pollination, he was interested. Said he thought bees would help the fruit crop, so he bought a few packages last spring, but not knowing how to handle them he lost them all during the summer. When I offered to rent strong colonies of bees and move them out before the calyx spray for less than the cost of a package, we made a deal on the spot.

I moved 30 colonies with one super each, into his orchard, in April. Cherry bloom gave them a good start so they were at swarming pitch before apple bloom was half over. Wanting increase but not wanting to chase swarms, I cut all queen cells I found. Not all the colonies had started cells. I put one wall comb with pollen and honey in it into a hive body with five more frames of the youngest brood, and filled it up with foundation. I made sure the queen was left in the old hive body and filled it with foundation. All my queens were painted so it did not take long to find them.

The super was put back on the old body with the new, queenless body on top, and the date plus 12 was written on it. I wrote that date in my book, too, as these bodies must be moved off the hive by that time, before any young queen hatches.

I moved the top bodies with the queen cells in one load, in the day time. Got the lower bodies after dark to get all the flying bees.

On the 16th and 17th days after this dividing the new queens will fly out to mate, if the sun shines. It may pay to clean up around the yard or just loaf around a while both afternoons, as some of the bees may try to swarm out with the queens.

Yellow sweet clover was beginning to bloom, when I moved into a location close to the river. White sweet clover began to bloom before the yellow quit, so I had a super of nice honey to extract before the hay was cut.

The bees were moved higher up on a dry location late in June, where they made a little from wild primrose. Then they were moved into a mountain valley at 8,000 feet about the middle of July. There were acres of Rocky Mountain beeplant (cleome). I had only one empty extracting super on them, as I thought that would do for a week, but when I came with more supers, the bees were hanging out, having filled the one super, and they needed more room. I have always wondered how much honey I lost by not putting two supers on them sooner. That first week was the best honey flow of the year. I came back with more supers, but it took them two weeks to fill the second super, and only a few got enough in the third super to start capping.

The nights got so cold that the honey flow was over by September. So after taking off all the honey I could, I moved lower down and got a super of strong yellow honey from rubber weed, a small low-growing, stinking plant, and rabbit brush. I think they are a kind of grease wood as both have yellow flowers and the honey resembles the Spanish needle honey we used to get in Illinois.

The first snow of the season caught me before I got those bees home. It was cold enough to load in the daytime so was not so bad.

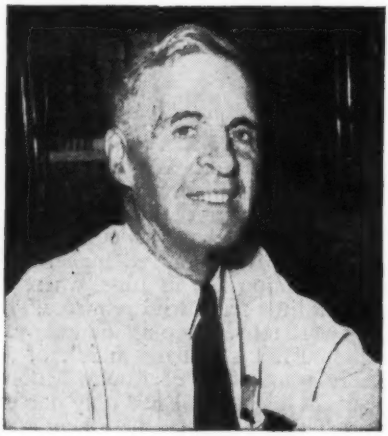
The second year was in the same location.

I got a job with a Texas beekeeper in January. He boosted a load of bees to move into the orange groves along the Rio Grande. He got a good extracting, took honey off in the morning and extracted that afternoon and evening without any heat so as not to knock the

(Continued on page 635)

A Talk to Beekeepers

by M. J. Deyell



IT WAS GEORGE ELIOT who said, "Blessed is the man who, having nothing to say, abstains from giving wordy evidence of that fact".

I can't be absolutely sure that I have anything worthwhile to say in this talk, one reason being that the bee season in this locality has been very disappointing thus far. This is one of the most peculiar seasons I have experienced. The weatherman hasn't been good to beekeepers. At least we can blame the lack of surplus honey on the weather. During the latter part of June and July when bees normally should have been storing surplus honey from clovers, we had rainy, cool weather most of the time. There was no lack of honey plants. Our scale hive has registered approximately the same weight for the last two months. That isn't good. Last year the scale hive gained over 150 pounds during the season.

I Haven't Yet Given Up Hope

The other day I told someone that I never give up on securing a fall crop of honey until about October 15th. The following experience may have been told before and I hesitate to be repetitious but it is worth telling again.

About 12 years ago we had a very cool September. Colonies did not have enough honey for winter stores. I had visions of having to buy sugar to feed the bees. However, on October 1st we had a spell of warm summer weather for 15 days. The mercury hovered around 80 degrees during the middle of the day. Copious rains had helped to bring on an abundance of white aster which was in bloom at that time. The bees carried in nectar like they do during summer months. The scale hive gained from five to seven pounds a day. Combs were white and burr comb was abundant. The bees filled up their food chambers and stored a good surplus. I had one yard that averaged 75 pounds per colony surplus honey. I have never seen anything like it before or since and perhaps will never see it again but it might possibly happen, at least once more, and, let us hope, this fall. This is September 10 and there is time in this area for things to happen before cold weather sets in.

Beekeeping authorities in books and bee journals say that there should never be less than 15 pounds of honey in each hive during the active bee season. I certainly agree with that statement and I have noticed in the past, especially during the spring months, that when the honey in hives gets down below 10 or 15 pounds or near the vanishing point, queens will curtail their egg laying and consequently colony populations will decrease. However, this season, especially during the past five or six weeks bees managed to get enough nectar each day to simulate brood rearing. They also collected an unusual amount of pollen. At present most of our colonies are boiling over with bees, even though in some hives there is no sealed honey. And so, if there should be a honey flow in the future our bees will be ready to take full advantage of it.

Lest I should leave the wrong impression in regard to the importance of having a reasonable amount of sealed honey in brood chambers, at least 15 pounds, let me hasten to say that we should by all means have this as our objective; because, if a long spell of cool, rainy weather should occur, populous colonies not having around 15 pounds of honey would starve in a short time.

Do Bees Know What is Ahead?

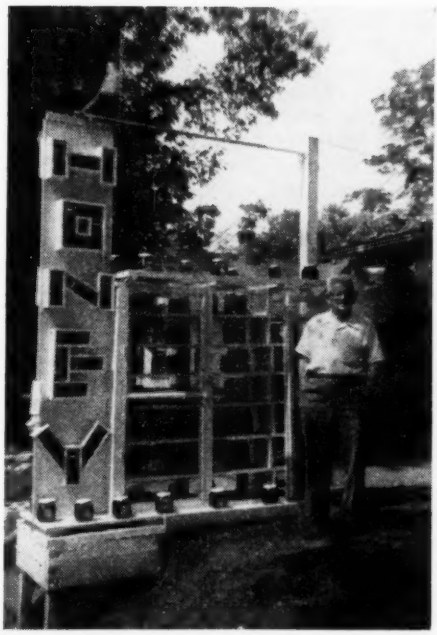
Some seem to think they do but I rather doubt it. However, I do recall some things that have happened which have caused me to wonder about how much bees do know about the future. One year at the beginning of the clover honey flow when it appeared that we were all set for a good crop, the queens slackened off in egg laying. In less than a week the honey flow stopped. Did the bees know that the honey flow was going to stop? Did the queens slacken their egg laying in order to avoid having a horde of consumers that would use up most of the honey that was stored? Your guess is as good as mine.

A Word about the Four and One-Half Year Old Queen

A few weeks ago I examined the colony mentioned in a previous talk that had two queens, a mother and daughter. I was unable to find the old queen that was clipped and marked with paint on her thorax. I did find the young queen and put her down in the lower brood chamber under a queen excluder. In the last few days I examined the colony again and did not find the old queen above the excluder, nor could I see her in the lower chamber under the excluder. It is possible she may be there but I rather think she has died or perhaps was disposed of by the bees.

You will recall I raised a question as to whether bees kill the old queen or she dies. At least one beekeeper, Mr. Otto Scholze of Warrens, Wisconsin, wrote me as follows: "You asked what happens to old queens. Your bee experience is far greater than mine. I have worked with bees every year since 1917 yet I can tell you what goes with old queens; they crawl out of the hive to die like drones in the fall, only I don't believe they are pushed out like the drones. It seems like they come on their own account".

Mr. Scholze may be right. I didn't actually see this old queen leave the hive to die so I can't say for sure what actually did happen to her. Chances are I may find her in the hive with the young queen, next time I examine the colony. Possibly some of you readers can throw some light on this matter.



This attractive roadside stand belongs to George W. Forgy of Cowan, Tenn. He sells a lot of honey each year.

Feed Sugar Syrup if Necessary

In some parts of the country there is practically no fall honey flow of any consequence and it may be necessary in some instances to feed syrup to make up any deficiency in winter stores. The syrup should be fed before the weather gets too cold so that the bees may store it in the combs.

There are various ways of feeding bees. Bee feeders are available from supply houses. The division board feeder is quite good. It puts the syrup where the bees can get to it easily. Many beekeepers use a five-pound or ten-pound friction-top pail. About a dozen or 15 holes are punched in the lid of each pail with a 2-penny nail. The pail is filled with syrup and inverted or turned upside down over the hole in the inner cover when the center block is removed, or the pail of syrup may be put on top of the brood frames. It is an advantage to have the syrup warm or almost hot especially if the weather is cold. An empty hive or super should be placed on the inner cover or brood chamber to cover the pail of syrup while the bees

XUM

are taking it. The outer cover should be placed on the empty hive body while the bees are taking the syrup.

Each colony should have not less than 50 or 60 pounds or more of stores to go into winter quarters. This amount is calculated to take the bees through the winter and early spring months.

Some Random Thoughts

As I look back on some of the mistakes I have made in beekeeping, I wonder how I could have been so foolish as to have made such mistakes.

For example, when I kept bees in Michigan a number of years ago I had 8-frame hives mostly, because the beekeeper from whom I got the bees was a comb honey producer and used 8-frame equipment. It used to be thought that the 8-frame hive was more suitable for comb honey production than the 10-frame hive. I rather think there is something to that idea, because a good queen is likely to keep 8 combs quite well filled with brood during the honey flow and if she does, the bees then have to carry the incoming honey up into the supers. However, I have found when using 10-frame equipment, that the two outside combs in each brood chamber are usually filled with honey and pollen, leaving the 8 combs in the center for the queen to occupy.

Well, to get back to Michigan experience, my wife and I had hoped to reach a certain goal in honey production that season and as we were falling a little below that goal, I went through the apiary during early August, removing some filled combs of honey from brood chambers in order to make up the deficit. I was counting on the bees filling up the brood chambers with fall honey. The bees stored very little surplus fall honey that season, consequently they went into winter somewhat light in stores. The following spring it was necessary to feed sugar syrup. I learned the hard way that it isn't wise to remove combs of honey from brood chambers in the fall.

Don't Expose Queen Bees to the Sun

A few years ago while introducing some queens during a rather warm day when the sun was shining brightly, I laid a queen cage containing the queen and attendant bees on top of a hive cover with the screen facing up while I manipulated a hive to find and remove a worthless queen. When I went to get the queen on top of the hive I found her dead although the worker bees that were with the queen were still alive. It seems that queens cannot stand the strong rays of the sun. It would seem preferable to put cages containing queens in a shady place until ready to be introduced. At least, if they are placed on top of a hive cover temporarily, be sure to turn the screens down.

Keep Your Eyes on the Queen

A few days ago my partner and I were preparing two one-frame observation hives each with a comb of brood, bees, and a queen, for display at the county fair. I have found from past experiences that when the queen is located it is well to pick up the comb containing the queen and keep your eyes right on her until it is time to place her on the comb that is selected to be put into the observation hive. This means that two can work at this job better than one. The person who is not holding the comb with the queen can select a suitable comb of brood with bees to put into the hive. If the comb containing the queen is stood beside a tree or some other object, the queen may crawl off the comb into the grass and get lost. If one person is putting up an observation hive it seems best to slip the queen into a cage temporarily, after she is found and until a suitable comb of brood and bees can be found to put into the hive.

Marking a Queen

A one-frame observation hive with bees and queen attracts considerable attention during a county fair. Invariably people will ask, "Where is the queen?" A marked queen can be found quite easily. Marking a queen is not difficult if you go at it in the right way. I use bright-colored finger-nail polish. I have borrowed a small jar of this polish from my granddaughter. When marking the queen I grasp the wings of the queen with my right index finger and thumb and then transfer her to the index finger and thumb of the left hand, allowing the abdomen to rest on the second finger. Unless you are accustomed to handling queens there is danger of crushing them between your thumb and finger.

Queen breeders who clip the wings of queens usually follow this procedure.

However, when I visited Leslie Little of Shelbyville, Tennessee, just recently he put me onto what seems to be a better way of holding the queen when she is being clipped or marked. Instead of holding the queen between the thumb and first finger he grasps the queen by her front legs, preferably four legs and does the clipping. This same procedure could be followed in marking the queen. There would then be less danger of hurting her.

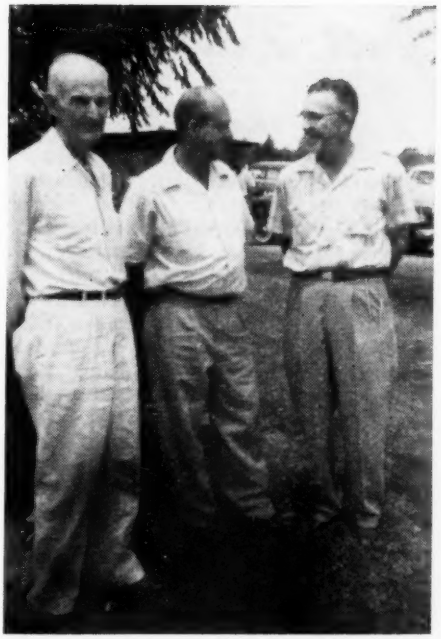
To mark the queen take a sharpened toothpick and dip it into the fingernail polish then touch the toothpick with polish to the top of the thorax, or what is sometimes called the shield. Do not get the polish spread over the body of the queen. A small amount of polish shows up well so that she can be easily seen among the hundreds of bees in the hive.

Visiting Tennessee Beekeepers

During the first week in August I attended a meeting of the Eastern Beekeepers' Association near Limestone, also a meeting near Fayetteville, Tenn., and had a wonderful time. During the meetings there was a question and answer session and some of the beekeepers asked questions that were difficult to answer. One question had reference to the difference between supersedure cells and the swarm cells and whether or not swarms do issue when supersedure cells are found in the hive. Leslie Little and I did our best to answer this question. Swarm cells are usually found at or near the bottom of brood combs and there may be from a dozen to 20 cells, possibly more, depending on the race or strain of bees. Supersedure cells usually number from three to five and are usually found near the center of brood combs.

It seems possible under certain conditions, when a heavy honey flow comes on suddenly and brood chambers are congested, that swarms may sometimes issue under the supersedure impulse.

About 10 years ago I asked two experienced beekeepers to write an article on this subject. These beekeepers failed to come across with the articles. If some of you readers feel qualified to write on this subject, just let yourself go.



Left to right: W. D. Reams, La Belle, Fla.; Jes Humberd, Chattanooga, Tenn.; and Leslie Little, Shelbyville, Tenn., State Apiarist.

Away from It All

We should get clear away from our work once in a while and I did this a few weeks ago when I flew to California and back. I decided not to call on beekeepers, as I usually do on such trips. I wanted to get away from bees. I went out there to see a new grandson, 19 months old, also two daughters and families living south of San Francisco. I did, however, meet one beekeeper, a Mr. Horst of Phoenix, Arizona, and had a good visit with him while calling on Roland Stone of Superior Honey Company in their new plant.

On traveling from San Francisco to Los Angeles on the Southern Pacific, daylight ride, I saw only two bee hives en route. There surely must have been many more hives, as California has over half a million colonies of bees.

On the daylight trip home by plane I saw many snow-capped mountains west of the great divide, a thrilling experience. East of the Missouri the plains had the appearance of a checker board. I could see fields, farm buildings, and cars but I was too high up to see bee hives.

Just News

The **Westchester County Beekeepers' Association** will hold its first indoor meeting at the Odd Fellows Hall, 20 Lockwood Avenue, New Rochelle, N. Y., on Sunday, October 21, at 2:30 p.m. Plans will be discussed in regard to the "Honey Contest" which will take place at the November meeting. Topic of discussion will be "Wintering your Hives". Now that vacation is over, let's make this meeting a good turnout. Visitors are also welcomed. Refreshments will be served at the end of the meeting by the "Queen Bees". — Mrs. Alfred Roth, Pub.

The **New Jersey Beekeepers' Association** will hold its regular Fall meeting in The Roger Smith Hotel in New Brunswick, N. J., on October 27th at 2:00 P.M. and a dinner will be served at 6:00 P.M. The **big event** at this meeting is The Annual Honey Cookery Contest. There will be five classes in which to enter.—E. W. Sutvan, Sect'y.

North Georgia Beekeepers' Association will hold its October meeting Sunday 14th at 4:00 P.M. at the home of Mr. and Mrs. E. L. Bell, Hambrick Road, Stone Mountain, Georgia. Bring the ingredients for a hamburger and we will have a hamburger fry. Visitors welcome.—Mrs. James Rochel, Jr., Sec.

The regular meeting of the **Eastern Missouri Beekeepers' Association** will be held at 7:30 P.M. Tuesday evening, October 2 in the St. Louis County Courthouse, Clayton, Missouri. Feature of the evening will be showing of the film "When Bee Meets Bee". Visitors are cordially invited to attend.—Ray Reinhold, Sec'y.,-Treas.

The **Texas Beekeepers' Association** will hold its meeting on November 12 and 13, at College Station. An interesting program has been planned. Further details will be found in the Texas Beekeepers' Association Newsletter.

The Annual Meeting and Convention of the **Manitoba Beekeepers' Association** will be held Tuesday and Wednesday, November 20th and 21st, at the Airport Hotel in St. James, Winnipeg. This will be the 50th Annual Meeting and Convention of the Association and the directors are hoping that many Manitoba beekeepers and others interested will attend to make our Jubilee event a memorable occasion. — D. R. Robertson, Sec'y.-Treas.

The annual meeting of the **Mississippi State Beekeepers' Association** will be held on October 19, at the Alumni and Student Building, Mississippi State College, State College, Miss. A cordial invitation to all.

The **Apiary Division** of the **Diamond Match Company** has moved to a new plant located at 2300 South Saybrook Ave., Los Angeles 22, California, where beekeepers will receive better service than ever before.

The next meeting of the **Norfolk County Beekeepers' Association** will be held on Monday evening, October 1st at 8 o'clock in the Assembly Hall of the Norfolk County Agricultural School, 460 Main St., (Route 1A), Walpole, Mass. All subsequent meetings of the Association have been tentatively scheduled for the first Monday of each month at the school. Beekeepers and their friends are cordially invited to attend these meetings. — Betty Ann Fisher, Publicity.

The **Georgia Beekeepers' Association** will meet in Hahira, Georgia, October 15 and 16. Registration will begin at 8:00 A.M. There will be a banquet on the evening of the 15th for all attending. Meeting will adjourn at noon on October 16th. Those attending the Southern Conference in Chattanooga, Tennessee, are urged to drop down to Hahira. Hotel or motel accommodations are readily available in Valdosta, 14 miles south of Hahira. Limited accommodations are available in Hahira and anyone desiring reservations in Hahira

should write to Garnett Puett, Jr., Georgia Beekeepers' Association Secretary, Hahira, Georgia.

SOUTHERN STATES BEEKEEPERS' FEDERATION CONVENTION
The Hotel Patton, Chattanooga, Tenn.
October 10, 11, 12, 1956

October 10, 1956

3:30 Business Meeting — American Bee Breeders' Association
4:00 Business Meeting — Tennessee Beekeepers' Association
7:00 Informal Reception — Tennessee Beekeepers' Association and Chattanooga Area Beekeepers' Association

October 11, 1956

8:30 Registration — Tennessee Beekeepers' Auxiliary
9:00 Call to Order — Pres. W. A. Stephen
Invocation — Rev. W. S. Keese
Welcome — Mayor P. R. Olgiati
Response — Lynn Dewey
President's Address
10:00 Our Future Bees — Dr. C. H. Cale, Jr.
10:20 Lessons from European Beekeeping — James I. Hambleton
11:00 Better Bees from Commercial Breeders — Paul Cutts
11:30 Recent Progress in Bee Genetics — Dr. Otto Mackensen

Afternoon session is divided into two parts, Commercial and Hobbyist. Also, a conference of the Southeastern Apiary Inspectors will be held, Homer Tate, presiding.

Commercial

1:30 Preparing and Marketing your Honey
A Panel Discussion — Moderator, A. V. Dowling; Members, are Raymond Fischer, H. L. Maxwell, H. C. Babcock, and H. L. Murphree
2:00 Your Honey Price Support Program — Harold Clay
2:15 Impending Dangers to Our Industry — A. D. Hiett
2:40 Swarm Control in Migratory and Stationary Beekeeping — George Abrams
3:10 Current Research on the Chemistry of Honey — Dr. J. W. White
3:30 Nosema Disease in the South — Dr. Leslie L. Ellis
3:45 Changes in Florida's Inspection Law — H. E. Foster
4:00 Packege Bees and Queen Production
A Panel Discussion — Moderator Leslie Little; Members, E. C. Bessonet, M. S. Fortune, Eugene Jensen, Warren Wilbanks, Harvey York, Stanley Weaver

Hobbyist — Jes Humberd, Presiding

1:30 The Importance of the Hobbyist — Alan Root
1:50 Pleasure and Profit from Backlot Bees — Walter T. Kelley
2:10 The Way the Bee Flies — M. C. Dadant
2:30 Purposes and Aims of the Eastern Apicultural Society — J. G. Levitre
Recess
3:00 Glass and Honey — George Dakan
3:30 Question and Answer Period — Jes Humberd

Both groups will re-convene for the following:

4:15 Sticky Tricky Quiz Show, 64 Mil Questions
7:30 Banquet — Toastmaster, Alan Root; Banquet Speaker — Buford Ellington

October 12, 1956

9:20 Cooperative Packing Enters the South Sioux Honey Asso. Representative
9:40 The Work of the American Beekeepers' Federation — C. L. Floyd
10:00 The Glass Honey Sells In — G. O. Mitchell
10:30 Using your American Honey Institute — Mrs. Harriett M. Grace
10:15 Cooking Time
10:50 Cooking Time — Chessie Shelton
11:10 Bee Stings and Arthritis — Prof. F. E. Guyton
11:30 Southern Honey Plants & Southern Honeys — Harvey B. Lovell
1:30 Label Contest Winners — Dr. E. K. Patton
1:45 Bees Cooperate in Conservation — John D. Haynie
2:15 Final Business Meeting

The **Berks County Beekeepers' Association** will hold its fall meeting on Tuesday, October 16, 1956 at 8 P.M., in the Ontelaunee High School, West Leesport, Pa., on route 122, about nine miles north of Reading. Mr. W. W. Clarke, Extension Bee Specialist of the Pennsylvania State University will speak. The program will also include a film.—Samuel B. Althouse, Sec.-Treas.

(Contined on page 632)

The fishing is good around Chattanooga, Tennessee — at least the son of Carl M. Teasley, Apison, Tenn., made a good catch. Carl says potential fisherman attending the Chattanooga meeting will get "free" fishing on the evening of October 12 if they will write him in advance.

American Honey Institute News Notes

HARRIETT M. GRACE, Director
Commercial State Bank Building, Madison 3, Wisconsin

SURVEYS MADE by research bureaus show that Special Weeks set aside by various trade associations, such as your American Honey Institute, not only are helpful to homemakers, restaurant managers, candy manufacturers, meat packers, and stores but are even more valuable to the industry.

The old proverb, "constant dripping wears away the hardest stone" applies to promotion of honey products. Honey Week does not mean educating consumers for one week only to use Honey, but it serves to give the homemaker a "beginning course" to be followed through the year by "refresher" courses by the American Honey Institute.

The homemakers are given a recipe folder by the producer or packer and from then on the homemaker keeps in touch with the Institute to receive more material.

The American Honey Institute has a series of outstanding Honey Cookbooks that are "top" Honey promoters.

The recipe still tops the list in best ways to advertise.

The recipe might be compared to a woman's hat—No woman has too many —She always needs a new one.

* * * * *

Honey Week, which always comes the last week in October, starts this year on October 28 and continues to November 4. Yes, those dates aren't far away as one reads this on an early bright blue weather day in October. But we all know the end of October will come too soon unless we plan and order material this week from the American Honey Institute, Madison 3, Wisconsin.

Remember that every American Honey Institute book or leaflet you give or sell to your customer is a silent salesman for your product.

From two important states in the Union, the Institute has recently received many letters from homemakers or others stating that they could not buy a Honey recipe book at the Fair and asking how to get one.

The American Dietetic Association is holding its annual convention in Milwaukee, Wisconsin, October 9-12 this year.

The Director of the American Honey Institute is an active member and will serve on one of the committees.

The Department of Agriculture in Wisconsin will have a booth in which a Honey section will be included. The American Honey Institute is furnishing the literature for these dietitians who will be here from every state in the Union, Hawaii, and Canada.

* * * * *

Recently Theta Sigma Phi, the Journalists from all over the country, met in Madison for its convention, and at each place at the banquet there was a three-ounce container of beautiful extracted Honey (no brand name) from American Honey Institute. Letters of appreciation are still coming in to the Institute because of this.

BEE STINGS SOMETIMES HELP

BEE STINGS will sometimes help folks with arthritis when miracle drugs like cortisone have failed, reports Henry Simons, one of the southern field editors.

Henry made this discovery in a recent chat with Prof. F. E. Guyton, Alabama Polytechnic Institute, who has been studying bee sting "therapy" for 14 years. No stings are permitted except in the presence of physicians.

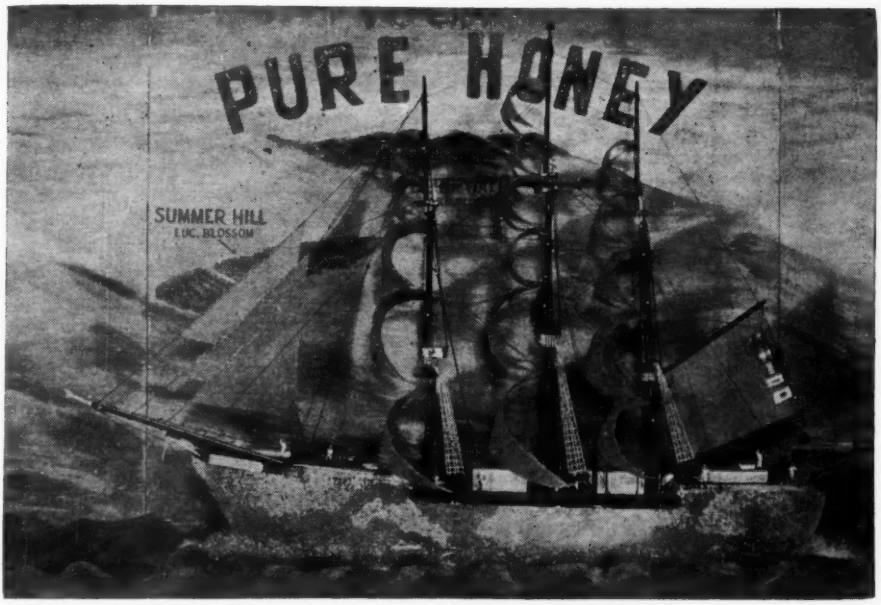
At first the patient receives only one sting. That's to see if he's allergic to bee "bites". Thereafter, the number depends on the patient's reaction. Some receive up to 75 stings per treatment. Only six patients out of 75 haven't been helped, Guyton told Henry.

"When I was a boy in South Carolina, I sure had a lot of treatments for arthritis—and didn't know it", comments Henry.

Farm Journal, February 1956

A Honey of an Exhibit

Described by T. H. G. FARNDEN, Natal, So. Africa



THE LATEST THING in bee exhibits comes from Mr. V. G. Gray of Mount Pleasant Apiaries, Pietermaritzburg, Natal, who used a ship as the "piece de resistance" of his show set for the Royal Agricultural Show held during June of this year. Mr. Gray, who is noted for the originality of his ideas, claims that it is easy to get bees to work for you if you have sufficient knowledge of their mentality. It is just a matter of knowing what you want and having the necessary patience to divert the bees' energies into the channels required to carry out the idea you have in mind.

In fashioning the body of the ship a special frame was made from light wood, and covered completely with comb foundation to give the bees something on which to build. Around this was fitted an outer cover, also of wood, so that the "frame" was completely enclosed, but with sufficient space between the two parts for the colony to work. This meant that he had a hive with one frame of unusual shape and design. At first the swarm was reluctant to accept this new home, but with a little persuasion from the smoker and some unhatched brood it was at last induced to go to work. As there was no definite honey flow at the time artificial feeding had to be resorted to for part of the three months it took to build the ship, especially at the latter end when the coming date of the show necessitated a speeding up of operations.

But the job was finished at last, and when the outer cover was removed it was found that the bees had done a really fine piece of work, building in regular fashion and neatly capping each cell before passing on to the next.

Decks, masts, and rigging were made without aid from the bees, as were the sails which were cut from unused comb foundation. A few dabs of paint here and there, a sailor or two and a few tiny flags gave the finishing touches.

The result was that Mr. Gray's stall was invariably the center of a wondering crowd who came to see a bee wizard and his work—and sales rose in a most satisfying manner.

JUST NEWS

(Continued from page 629)

The fall meeting of the **Cuyahoga County Beekeepers' Association** will be held Sunday afternoon, October 28, in Miles Ave. Church of Christ, 9200 Miles Ave. There will be good speakers and a colored movie on bees, also doughnuts and cider. A cordial invitation to all.

The first indoor meeting of the fall season of the **Middlesex County Beekeepers' Association** (Mass.) will be held on Saturday, October 27, 1956, at the Waltham Field Station. A banquet will be held for members and guests, and member Carl Peckham has been appointed chairman of the committee to make arrangements for this meeting.—L. C. Proctor, Sec.

The annual convention of the **Indiana State Beekeepers' Association** will be held Saturday, October 27 at Hotel Washington, Indianapolis. The meeting will convene at 9:30 A.M., D.S.T. with a luncheon at 12:00 noon at the hotel. A versatile program has been prepared which the committee feels will be acceptable and profitable to all classes of beekeepers.

The fall meeting of the **Connecticut Beekeepers' Association** will be held October 20, 1956, beginning 10 A.M. at the Y.M.C.A., corner of Pearl and Jewel Sts., Hartford, Conn. The featured speaker for the day will be Paul L. Holcombe of Lambertville, N. J., who will speak on fall and winter care of bees. Samples of honey, comb honey, and wax by beekeepers attending will be welcome. Lunch will be served in the Y.M.C.A. cafeteria. Out-of-state visiting beekeepers are welcome to attend the meeting.—Philemon J. Hewitt, Jr., Chairman of Publicity.

The **Midwestern Beekeepers' Association** will hold its monthly meeting on Sunday, October 14, at the home of Frank McLaughlin, 328 So. Monroe, Kansas City, Mo. at 2:30 p.m. General discussion on Fall Preparation of Bees. Movies, drawing prize, and refreshments. All welcome. — Mrs. William Brite, Secretary.

Word has just reached us concerning the untimely passing of **Mr. David Dunavan,** Professor of Entomology, Clemson College, Clemson, S. C. He passed away while attending the International Congress of Entomology in Montreal on August 20. Mr. Dunavan has made a worthwhile contribution to our industry during the years and he will be sorely missed.

The 1956 fall meeting of the **Florida State Beekeepers' Association** will be held October 18 and 19, in Clearwater on Florida's Gulf Coast. We are expecting a large attendance to hear the many fine speakers from many parts of the country, who will be on our program. Mr. Alan Root will serve as Toastmaster at the banquet at which time the 1957 Florida Honey Queen will be selected. Anyone who plans on attending this meeting, should make their reservations early at the Gray Moss Inn, Clearwater, Florida.—F. A. Robinson, Secretary.

78th Annual Convention
Wisconsin State Beekeepers' Association
Courthouse, Viroqua Oct. 24 & 25
Hotel Fortney — Convention Hdq.

October 24

9:00 A.M. Registration
9:45 A.M. Welcome Address, Chamber of Commerce
10:00 A.M. President's Message, Appointment of Committees, Committee's Reports, Introduction of District Chairman and Crop Reports
10:15 A.M. H. A. Schaefer, Outline of Program
11:00 A.M. John F. Long, Inspection Report and Observations
11:30 A.M. Al. Hanson, Soil Conservationist, Viroqua
12:00 Noon Recess
1:30 P.M. Robert Molloy, Chemist, Sioux Honey Association, "Honey Research"
2:15 P.M. Dr. C. L. Farrar, USDA, Univ. of Wisconsin, "Agr. Eng., Research in Honey Production"
3:00 P.M. Dr. T. Gochnauer, Univ. of Minnesota, "Anti-biotics for control of Bee Diseases"
3:45 P.M. Dr. G. H. Cale, Jr., "Queens for the Future"

October 25

9:30 A.M. C. D. Floyd, Minn. State Apiary Inspector, "Honey Marketing"
10:30 A.M. Mrs. Harriett M. Grace, Director American Honey Institute, "Honey Promotion"
11:30 A.M. Art Kehl — Summary
1:30 P.M. Business Meeting, Report of Resolutions, Nominations, Auditing, and State Fair Committees. Election of Officers
2:30 P.M. Introduction of QUEEN Contestants
3:45 P.M. "What is Your Problem?" Discussion Period.
6:30 P.M. BANQUET — Judge Neprud, Master of Ceremonies. Coronation of Honey QUEEN. D. N. McDowell, Director Wis. Dept. of Agri., Guest Speaker

Buy and Sell

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 18c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceeding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Onsted, Michigan.

IOWA honey, one can or truck loads. Russell D. Smalley, Beaver, Iowa.

CLOVER extracted honey in sixties. Abram Brubaker, Rt. 2, Lancaster, Pa.

MICHIGAN'S finest raspberry, basswood, clover comb honey, in 4 x 5 window cartoned cellophane wrapped sections. Extra fancy, $8.00; Fancy, $7.00; No. 1, $6.00; No. 2, $5.00 case. E. Z. Quick Way B Farms, Boyne Falls, Michigan.

NEW CROP WHITE HONEY—Clover and vetch, 20 cents per pound in sixties. Lose Brothers, 206 E. Jefferson, Louisville, Ky.

MY CROP of light honey. Wayne Keller, Oshkosh, Nebr.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

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CASH FOR BEESWAX. Write as to quantity and we will quote price. Muench-Kreuzer Candle Co., Inc., Syracuse, N. Y.

WANTED—All grades of extracted honey. Send sample and price. Deer Creek Honey Farms, London, Ohio.

WANTED — White extracted or comb honey. Send sample. Millersport Honey Company, Millersport, Ohio.

BEST CASH DEAL for your honey (any grade) and beeswax. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

HONEY WANTED, all grades in 60's. Mail samples, advise quantity, best price. M. R. Cary Corp., 1112-14 East Erie Blvd., Syracuse, N. Y.

BEESWAX WANTED — Highest prices paid in cash or trade for bee supplies. The A. I. Root Company, Medina,Ohio; Council Bluffs, Iowa; San Antonio, Texas.

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WANTED: Light amber clover and fall flowers honey, no buckwheat. Also white clover. Send sample and lowest price. Cloverdale Honey Co., Fredonia, N. Y.

WANTED—Honey in sixty-pound cans, also beeswax, any quantity. L. E. Allen, Tipton, Mich.

CASH for Amber and Buckwheat Honey. Best cash price for wax. Hubbard, Onsted, Michigan.

WANTED—Buckwheat and some amber honey. Eastern Food Products, 421 Bedford Ave., Brooklyn, N. Y.

WANTED—Extracted honey, all grades. all amounts. We pay cash. Send sample and price wanted. The Honeymoon Products Co., Box 85, River Rouge, Mich.

FOR SALE

WRITE FOR CATALOG — Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies and Comb Foundation. Onsted, Michigan.

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Bred for
HARDINESS, LONG LIFE,
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We use all possible care in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for a certificate of inspection as a matter of precaution.

PACKAGE BEES—Take a vacation on your express money. Come for your bees; be our guest while here. 1800 hives to shake. Booking orders now. MILLER BROS., SAFFORD, ALA.

IT PAYS TO REQUEEN. Old queens in your hives cost a lot through lost production. Young queens pay for themselves and give a good profit besides. One super of honey difference in favor of the young queen is not too much to expect in most any location. We can furnish the best select young Italian laying queens from now until October at $1.00 each; 10, $9.00; 25, $20.00. Prompt shipment. No disease. Air Mail postpaid. H. C. Short, Fitzpatrick, Ala.

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PLAIN or wavy-wired foundation. Beeswax rendered and purchased. Wax Workers, Ithaca, New York.

ROYAL JELLY in capsules. Each contains 10 mg. Royal Jelly, 5 mg. Vitamin B, 5 mg. Calcium Pantothenate. Boxes of 30, $1.50 to beekeepers. Retails for $3.00. Prairie View Honey Co., 12303 12th St., Detroit 6, Michigan.

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Know interesting facts concerning the bees of India through the INDIAN BEE JOURNAL, published in English by the Bhupen Apiaries (Himalayas), Ramgarrh

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HIGH ALTITUDE BEEKEEPING

(Continued from page 623)

orange flavor. Then he took it all to San Antonio for a special high price. I took part of my pay in package bees and went back to Colorado in April.

I moved my bees into the same orchard as before, then I shook the bees into their hives, sprinkled them with thin warm sugar syrup and shook a queenless package onto the pile of bees and sprinkled them again. They mixed all right and really went to work. I got a good extracting from fruit bloom that May and thought I was going to make a killing that year. I'd made the same moves that had paid the year before, and now I had more bees.

That was the rainiest summer we had in years, the sweet clover grew rank and tall, nectar was so thin and watery the bees nearly starved. Cockle burrs sprang up in places where they hadn't been seen for years and crowded the cleome out. I got one small extracting from the rabbit brush.

CAUCASIAN

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Your Choice of Two Outstanding Strains

DADANT'S Improved Starlines or
YORK'S Quality Bred Italians

Italians		Starlines	
1-24	$1.10	1-24	$1.35
25-99	1.00	25-99	1.25
100-up	.90	100-up	1.15

The Preference of Leading Honey Producers

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(The Universal Apiaries)

No more Dadant Starline Hybrid Queens for balance of this season. Look out again for our Starline ad in 1957.

GARON'S 3-BANDED ITALIANS ONLY
for balance of season.

Prices 1-24 ....95c 25-99 ....90c 100-up 85c

Queens clipped and/or marked, if desired, free.

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Are used extensively in most countries where beekeeping is carried on in the modern way, with highly satisfactory results; proving they are adaptable to varied climatic conditions and modes of management.
If you haven't already tried them, why don't you do so? We are sure you will be pleased in every way.
October will wind up this season, but we will be ready to serve you in 1957. Let's have your inquiries early.

JENSEN'S APIARIES, MACON, MISS., U.S.A.
"The business QUALITY built."

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THREE BANDED ITALIANS
Queens, balance of season, 70c each
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With either Series "E" or Series "H" you'll be saving in the best way there is for those really important things: your children's education, farm improvements, possible emergencies, and your eventual retirement.

AIR AGE AND BEEKEEPERS

(Continued from page 593)

fly, as some grandmothers are flying quite successfully.

Another thing that merits mentioning here is the use of the small plane for reseeding areas to bee pasture. The airplane is ideal for this as the wind from the propeller distributes the seed evenly, and you may carry several hundred pounds of seed at each load if necessary.

HONEY PRODUCTION IN FLORIDA

(Continued from page 589)

problem to beekeeping in the Everglades whenever a hurricane comes through, and large rocks are considered standard beekeeping equipment for holding covers in place during the hurricane season. Fig. 5 shows a typical apiary in the Everglades area.

Another rather distinct honey producing region in Florida is known as the mangrove region. This area extends in a narrow strip along both coasts from St. Johns County on the east to Levy County on the west. There are several species of mangrove in Florida but only black mangrove, **Avicennia nitida**, is important for honey production. The mangrove blooms in June and July and in some years the flow from this source is very heavy and the honey produced is water white in color and has a very pleasant and distinctive flavor.

Northern Florida (see map) is still another important honey producing area. The main honey plant found in this section is gallberry, **Ilex glabra,** L. Gallberry is a small shrubby plant that grows in low moist areas throughout the entire state, but is most concentrated in the northern part of the state. Despite its name, gallberry is one of the better honeys produced in Florida. Gallberry honey is mild-flavored and varies in color from white to dark amber. This honey is used mainly for blending with darker grades of honey.

Also in the northern part of the state, there are several areas in which are found heavy concentrations of partridge pea, **Chamaecrista brachiata**, Pollard. The honey from this plant is dark and strong flavored and it is all sold as baker grade honey.

The preceding discussion has included only a few of the more important nectar plants found in the different areas of Florida. There are hundreds more plants that may be important in some particular location but time and space will not permit a discussion of all of these plants.

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Tested queens $2.00 each.

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Mayhew, Miss.

Buy U. S. Savings Bonds
They come in all sizes....
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QUEENS "ITALIANS" QUEENS

For your summer and fall requeening we offer you an outstanding Strain of Three Band Italians and can furnish select young laying Queens promptly on receipt of your order.

Prices

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Queens clipped and/or painted on request. Shipped prepaid Air Mail.

Quality Does Not Cost — It Pays

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We are always in the market for your beeswax. Drop us a line; and we will quote you the highest price, either in cash or in exchange for foundation and supplies. CONTACT US BEFORE YOU SELL.

Take Advantage of the Following Prices Which We Offer You for the Extracting Season:

Carbolic Acid - 5 lb.	**$ 4.75 (not mailable)**
Carbolic Acid - 1 lb.	**1.65 (not mailable)**
Cyanogas - 1 lb.	**1.00 (not mailable)**
Cyanogas - 5 lb.	**4.25 (not mailable)**
Two-stem Steam-heated Knife	**7.75**
1 1/4-inch Honey Pump	**58.75**
Electric Super Elevator	**200.00**
Electric Knife	**14.50**
Electric Plane	**16.80**
8-inch Hive Tool	**.85**
10-inch Hive Tool	**1.10**

SIOUX HONEY ASSOCIATION

SIOUX CITY, IOWA

Lima, Ohio; Rogers, Texas; Tacoma, Wash.; Anaheim, Calif; Waycross, Ga.

BEES

(Continued from page 606)

averse to taking nectar from nectaries on other parts of the plant when these are available. In cotton, for example, extra-floral nectaries are abundant and, since the nectar secreted evaporates freely, it is often more concentrated than that from the flowers (Fig. 7). Honeybees commonly lap up extra-floral nectar from cotton before seeking it in the flowers. Other cotton visitors, such as **Melissodes, Emphor,** and bumblebees, visit only the flowers. Even the males of these bees, although they have no interest in pollen, are faithful to the flowers. According to limited observation, extra-floral nectaries are visited principally by flies, honeybees, and (in the tropics) stingless bees.

Honeydew, secreted by sap-sucking insects, is a favorite "nectar" source for honeybees even though the honey produced from it is often unsatisfactory as bee food during the winter. As in the case of extra floral nectar, honeybees and stingless bees are the principal insects to use honeydew for making honey. However, many kinds of wasps and flies lap it up for their own nourishment. Halictids sometimes take honeydew, but this may be only for their own immediate needs.

Juices from ripe fruit are often used as a "nectar" by honeybees. They have often been accused of damaging fruit to secure the juices but, in most cases, birds or other insects, or simple cracking of the fruit, have been responsible for the skin breaks observed. In the tropics stingless bees are apparently more rightfully accused of being fruit destroyers. Halictids are the only other bees that we have seen feeding on broken fruit. It is interesting to note that the halictids observed are subsocial species. Perhaps the social habit has influenced this rather unusual tendency among bees to use non-floral sources for nectar.

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Quality Bred Italian Queens
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Our breeders picked from our Michigan Apiaires for high production and hardiness.

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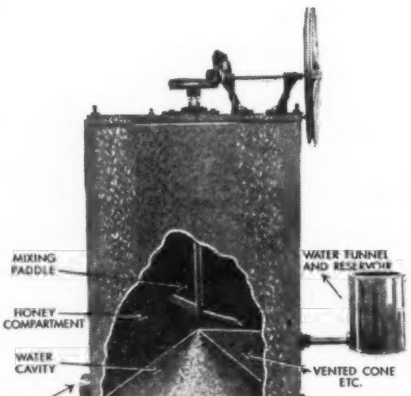

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